Market Assessment of Selected Colombian Natural Products for Putumayo

PHASE I.

In Support of the Colombian Alternative Development USAID Prime Contract No. 527-C-00-01-00091-00

For Chemonics International Inc.

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1. Summary.

The opportunity for natural product development in Colombia is great. The resurgence of popularity in natural products from the tropical forest has been felt greatest by Brazil and Peru in South America, as companies have rushed to "pioneer" the jungles for new natural products that can be fed into various market channels. Brazil and Peru have become so hot with the controversy of the "Bio-Pirates" that companies are now echoing their fear to become involved with these countries. Furthermore, the difficulty for even basic research to be done in these countries due to extensive new restrictions on plant research and export is well known. Here is where the opportunity lies for Colombia.

Although Colombia is a politically and economically volatile country, which has problems attracting investors, it also has not set such large restrictions on natural product business, and may use this to its advantage in breaking into already occupied market channels for natural products. Through this project, lies opportunities to both attract supply relations, and perhaps investment, while maintaining an ecological and socially beneficial approach to agronomic product development.. At the same time, Colombia is also internationally recognized as a stable and reliable exporter of agricultural products such as flowers, despite ongoing political volatility, thus providing confidence to potential trading partners in the natural product sector.

Our marketing study employed both primary and secondary data sets to identify market opportunities for the targeted Colombian natural plants and their associated plant products. We used both open interviews with buyers and traders in-depth interviews with targeted companies that expressed strong interest; and secondary data sets to provide some evidence and idea as to the size and value of the market for selected natural plant products. The strategic marketing approach that we have recommended is a pragmatic one that combines both tested and experimental methods for breaking into these market channels and choosing the correct products to develop. In our report, we have examined the markets, strengths, opportunities, weaknesses, and threats to development of the first round of candidates generated by Duke and Easterling plus a few additional plant candidates that we considered for discussion are in Section 7, and newer plant candidates that were identified during the Bogota Workshop held on September 26, 2002 and a follow-up all day meeting with CAB and Chemonics held on September 27, 2002. In total, over 40 plant candidates

were reviewed. Sections 4, 5 and 6 of the report focus on this analysis. We further deepen our analysis in Section 8, by identifying and analyzing the market channels we see as potentials for development of value-added products. In Section 9, we identify and characterize three “Target Health Categories” that have significant potential for natural product development in the U.S. We see this section as important in the coming year of creating industry relations and new product development for next 2nd fixed contract between ABSLLC and Chemonics. We have prepared three Appendix lists: Appendix A is a list of references used in the report and recommended along with suggestions for creating more in-depth market information during the 2nd contract. Appendix B is a list of specific contacts in the natural products area that we have begun discussions with, for possible supply, purchase, and product development relationships. Appendix B is not an exhaustive list of those companies contacted (as well over 100 companies were contacted), but a list of those discussions that are in progress. Appendix C includes a list of wholesale and retail vendors with sample products of the final list of plant candidates that have been agreed upon plus many others from the original plant candidate list.

A final list of plant candidates had been selected by all the participating groups based upon market/trade potential, adaptability to the region in Colombia, the time frame or rapidity from concept to first harvest, as well as a matrix of new crop criteria employed. Our role and this report reflects the market and trade considerations. The final list of plant candidates were categorized into crop clusters based upon final application and shared technology that would be employed in processing and included medicinals, essential oils, spices and flavorings, and incubator crops (next in-line crop alternatives). The selected plants included: The medicinal plants: *Petiveria alliacea*; *Ilex guayusa*; *Paulinia cupana*; *Uncaria tomentosa*; *Croton lechleri* ; and *Maytenus laevis*. For aromatic essential oils and/or dried teas: *Lippia alba*; *Lippia dulcis*; *Cymbopogon*; *Vetiver*; *Pogostemon*; and *Abelmoschus*. For spices and flavorings: *Aniba canelilla*; *Stevia* (as a sweetner); *Curcuma*; and *Zingiber*. Preliminary market assessments have been conducted on those listed above, with the exception of *Lippia alba* and *Lippia dulcis* which were added to the final list only at the Bogota meetings. Market assessments are still needed to be conducted on these species. Back-up incubator crops that could rapidly develop into larger volume and of economically significance include: *Bixa*; *Passiflora incarnata* and *P. edulis*; *Euterpe oleracea*; *Vanilla oleifera*; *Urtica urens*; *Lippia sidoides*; and *Tabebuia avellanedae*.

2. Policy Recommendation- A Defoliant Agent Testing Service

We have one important policy that we recommend that came to our attention by manufacturers (to remain un-named) who have tried to do business in Colombia in the past, and echoed by those who have some knowledge of Colombia. We need to develop in partnership with CAB, Chemonics and the government of Colombia a "Testing Program for Defoliant Sprays" for natural products grown in the Putumayo region being produced for export. We also recommend as part of this program (and an action item for our 2nd contract) a detailed report produced which is well researched about what is being sprayed, the chemical and biological characteristics, along with validated assay methods for detection of compounds. Tracing the pesticides that could be used in the region is possible, and a routine SOP will need to be implemented to show that the natural products are free of any of these chemical contaminants. Such a policy and testing service could be easy to implement and the information not difficult to ascertain. Policy details regarding cost of services (e.g. a free testing service initially or at cost), the mechanism and process by which it could be developed will need to be addressed in detail in the next phase. For supply or purchase agreements with products from the Putamayo to be developed with US and European buyers such as testing service will be critical.

3. A 3 Pronged- Market Approach to Natural Product Development

3.1 Market Channels and the "ADM" Model to Natural Product Development

Our analysis not only examines the plants as individuals per se, as Jim Duke's report had them ranked, but we have tried to examine each plant at the comparative evaluations in a more inclusive manner by thoroughly examining all the possible market channels for natural products, and how all of these plants may fit into each market channel. In doing so, we see our approach to natural product development in Colombia akin to (but more appropriate to) the "ADM" approach to natural product development. ADM developed a "core business" in four main areas of staple crops (corn, wheat, oilseed and others); from there, they grew their core business through further strategic alliances and product development, and their business branched into value added products. Their core staple crops were able to provide a foundation of growth into the value-added products of soy concentrates and isolates, to healthy meat substitutes and meat extenders. In corn production, they branched into ethanol, enzymes, carbon dioxide from fermentation, high fructose corn sweeteners and dextrose, and the list goes on. In Colombia, we recommend identifying a core group of plants upon which a myriad of products can be developed, and in developing a core group of technologies (drying, teas, distillation, others) upon which a myriad of natural plant products could be produced and processed. All recommendations and marketing strategies are based upon market demand.

3.2 Our 3 Pronged-Approach

In our approach to Colombia natural product development, we see three main simultaneous prongs to our efforts. Our approach in Colombia will be a little different from the ADM approach because we are not dealing with such heavy high volume staple crops, but rather a few commodities and smaller niche markets. **(1)** Our first pronged approach will be to identify a few commodity crops, which can then be diversified into value-added products over time; and then in concert with your groups reevaluate the plant candidate list to include all considerations in addition to marketing (germplasm availability, time to harvest, ease of production and processing). **(2)** The second pronged approach will be to develop lesser-known and experimental niche markets from medicinal, spices and other essential oil plants. Like the ADM approach, we will also try to focus on multiple market channels for several types of value added products from these plants. **(3)** The third main prong to our approach will be to develop a line of "Exclusively Colombian" plants. Brazil and Peru have done a good job in "claiming" the medicinal plants and natural products that they have become known for, such as maca and cat's claw from Peru, and guarana from Brazil. We see Colombia becoming a leader in some of their own indigenous plants. Our first candidate for this is *Ilex guayusa*, which we would for example in the next phase develop as a new commercial product in the US developed and marketed as 'Colombian Mate'. Plants known to come from Peru and Brazil, and which can be found or are available in Colombia, could also serve as a secondary country source for the products (e.g. Cat's Claw) where US and European buyers no longer want to rely on a single country when legal restrictions of the sole source country have later precluded product supply. Our rankings of the plants from all areas include this 3 pronged-approach. We have also summarized our rankings using an adapted form of Duke's criteria for market analysis.

3.3 The Most Promising Plants from a Marketing Perspective Using The Three Pronged-Approach Leaders

3.3.1.A. "Stable Commodity Herbs"

1. Top Core Commodities: **Ginger**, **Turmeric**, **Guarana** (*Paullinia cupana*).
2. Top Alternatives: **Jaborandi** (*Pilocarpus jaborandi*), **Annatto** (*Bixa orellana*), **Patchouli** (*Pogostemon cablin*).

3.3.2.B. Niche & Developing Markets

1. Top selections include: **Acai** (*Euterpe oleracea*), **Sangre de Drago** (*Croton lechleri*), **Passionflower** (*Passiflora* spp.) , **Cat's Claw** (*Uncaria tomentosa*).
2. Top Alternatives: **Stevia** (*Stevia rebaudiana*), **Ambrette** (Musk Okra, *Abelmoschus moschatus*), Indian Coleus (*Plectranthus barbatus*), ***Lippia sidoides***, Marapuama (*Ptychopetalum olacoides*), **Bitter Melon** (*Momordica charantia*).

3.3.3.C. "Exclusively Colombian"

1. Top selection: ***Ilex guayusa*** (The Colombia Mate, in contrast to Yerba mate)
2. Top Alternatives: **Anamu** (*Petiveria alliacea*), Canelo (*Aniba canelilla*), Matarraton (*Gliricidia sepium*)

3.4 Comparative Plant Ranking by Advanced Botanical Solutions LLC (using Duke's Scale)

Medicinal Ranking:	**Our Score*:**
Uncaria tomentosa (Cat's Claw)	2+
Artemisia annua (Annual Wormwood)	1
Croton *lechleri* (Sangre de Drago)	**3***
***Paullinia cupana* (Guarana)**	**3**
Tabebuia avellanedae (Pau d'Arco)	1+
Pilocarpus jaborandi (Jaborandi)	2
Plectranthus barbatus (Indian coleus)	2
Phyllanthus niruri (Chanca piedra)	1
Momordica charantia (Bitter Melon)	2
Bixa orellana (Annatto)	2
Phyllanthus acuminatus (Madura plátano)	1
Maytenus laevis (Chuchuhuaza)	1
Gliricidia sepium (Matarratón)	2
Petiveria alliacea (Anamú)	2
***Ilex guayusa* (Guayusa)**	**3**
Urera caracassana (Ortigo)	1

Spice Ranking:	**Our Score:**
***Cucurma longa* (Turmeric)**	**3**
***Zingiber zingiber* (Ginger)**	**3**
Hibiscus sabdariffa (Roselle)	2
Cinnamomum spp. (Cinnamon)	2
***Stevia rebaudiana* (Stevia)**	**3**
Tamarindus indica (Tamarind)	1

EO/Cosmetic/Fragrance Ranking:	**Our Score:**
Abelmoschus moschatus (Ambrette/Musk Okra)	2
***Pogostemon cablin* (Patchouli)**	**3**
Dipteryx odorata (Tonka Bean)	1
Vetiveria zizanioides (Vetiver)	2
Cymbopogon sp.(Lemon Grass)	2
Aloysia triphylla (Lemon verbena)	1
Aniba canelilla (Canelo)	2**

Our Additions Ranking:	**Our Score:**
Ptychopetalum olacoides (Marapuama or Muirapuama)	2
Passiflora incarnata, *P. edulis* and *P. alata*	2

(Passionflower, passion fruit, marcuja)	
Spilanthes (or Acmella) *oleracea*- (Jambu)	1
Lippia sidoides- (Alecrim or Alecrim-pimenta in Brasil)	2
Euterpe oleracea- (**Acai-** fruit and wood for hearts of palm)	**3**

*The rankings were based upon 1-3; with the higher the number the more market potential. All those in bold are highlighted as the most promising market candidates. Those with a '2' and/or '3' are promising for commercialization purposes from market demand and market interest..

Scoring Details:
1- WEAK POSSIBILITY—we see some serious obstacles and/or little demand for such a product.
2- AVERAGE POSSIBILITY---we see some good strengths and possible avenues for this product in both the market channels, and in overcoming obstacles to production and marketing.
3- EXCELLENT POSSIBILITY—we see this one as a "winner" the strengths and potentials all outweigh the bad, and we may have even located buyers for this already.
** Canelo originally rated and grouped within the essential oil fragrance plants also produces a spice of note and as such was rated by the entire group during the Bogota Workshop as one of the more promising spice and flavoring plants.

3.5. Final Selection of Plant Candidates Following the Bogota Workshop and Follow-Up Meeting with CAB and Chemonics

The final list of plant candidates had been selected by all the participating groups based upon market/trade potential, adaptability to the region in Colombia, the time frame or rapidity from concept to first harvest, as well as a matrix of new crop criteria employed. Our role and this report reflects the market and trade considerations. The final list of plant candidates were categorized into crop clusters based upon final application and shared technology that would be employed in processing and included medicinals, essential oils, spices and flavorings, and incubator crops (next in-line crop alternatives). The selected plants included: The medicinal plants: *Petiveria alliacea*; *Ilex guayusa*; *Paulinia cupana*; *Uncaria tomentosa*; *Croton lechleri* ; and *Maytenus laevis*. For aromatic essential oils and/or dried teas: *Lippia alba*; *Lippia dulcis*; *Cymbopogon*; *Vetiver*; *Pogostemon*; and *Abelmoschus*. For spices and flavorings: *Aniba canelilla*; *Stevia* (as a sweetner); *Curcuma*; and *Zingiber*. Preliminary market assessments have been conducted on those listed above, with the exception of *Lippia alba* and *Lippia dulcis* which were added to the final list only at the Bogota meetings. Market assessments are still needed to be conducted on these species. Back-up incubator crops that could rapidly develop into larger volume and of economically significance include: *Bixa*; *Passiflora incarnata* and *P. edulis*; *Euterpe oleracea*; *Vanilla oleifera*; *Urtica urens*; *Lippia sidoides*; and *Tabebuia avellanedae*.

4. Medicinal Plants

Review of Jim Duke's Top + Tom Easterlings's Additional Plants for Consideration in Phase 1: Selection of Plant Candidates for Putumayo Region

Uncaria tomentosa (Cat's Claw)
Artemisia annua (Annual Wormwood)
Croton lechleri (Sangre de Drago)
Paullinia cupana (Guarana)
Tabebuia avellanedae (Pau d'Arco)
Pilocarpus jaborandi (Jaborandi)
Plectranthus barbatus (Indian coleus)
Phyllanthus niruri (Chanca piedra)
Momordica charantia (Bitter Melon)
Bixa orellana (Annatto)
Phyllanthus acuminatus (Madura plátano)
Maytenus laevis (Chuchuhuaza)
Gliricidia sepium (Matarratón)
Petiveria alliacea (Anamú)
Ilex guayusa (Guayusa)
Urera caracassana (Ortigo)

*Our Additions (see Section V for complete analysis)**

Ptychopetalum olacoides (Marapuama or Muirapuama)
Passiflora incarnata, P. edulis and P. alata (passionflower,passion fruit, marcuja)
Spilanthes (or *Acmella*) *oleracea*- (Jambu)
Lippia sidoides- (Alecrim or Alecrim-pimenta in Brasil)
Euterpe oleracea- (Acai- fruit and wood for hearts of palm
*These plants were added in part based upon feedback from the marketplace as we interviewed buyers about the plant candidate list.

Scientific Name	**Common Name**	**Local & Trad. Uses**	**Our Use**	D *	FF *	FI *	C *	GR/ GW *	O*
Uncaria tomentosa	Cat's Claw	-wide medicinal uses; immune stimulant -local drinking water elixir and wood for	-dietary supp. For immune health	3	-	-	1	2	**3**

		furniture crafts?							
Artemisia annua	Annual Wormwood	-(in Asia) used for several TCM applications -no current local use -possible local malaria medicine	-malaria	1	-	-	1	2	**1**
Croton lechleri	Sangre de Drago	-local markets for traveler's diarrhea -wide medicinal traditional use -dyes? -local "band aid"	-diarrhea -antioxidant -band aid? -dye	3	-	-	2	3	**3**
Paullinia cupana	Guarana	-Brazilian beverage; energy and aphrodisiac -local alternative to cocaine effects?	-caffeine source -diet -energy -aphrodisiac	3	3	3	3	2	**3**
Tabebuia avellanedae	Pau d'Arco	-wood used for construc. -wide medicinal uses, and local medl. markets	-immune stimulant	2	-	-	-	1	**1**
Pilocarpus jaborandi	Jaborandi	-trad. Use as sweat inducer	- diet applications? thermogenic ? -pilocarpine for pharma	3	-	-	1	1	**2**
Plectranthus barbatus	Indian coleus	-in Brasil called "false Boldo"; trad. Beveragte/ medcine	-diet alternative -source of forskolin	2	-	-	-	1	**2**
Phyllanthus niruri	Chanca piedra	-local bitter and medicine for kidney stones	-kidney stones	2	-	-	-	1	**1**

		-local hepatitis plant?							
Momordica charantia	Bitter melon	-trad and local use for diabetes -local bitter for cooking	-diabetes medicine	2	2	-	-	1	**2**
Bixa orellana	Annatto	-trad. Body paint -local cooking -trad. medicine	-carotenoid source –bodypaint?	1	2	2	2	2	**2**
Phyllanthus acuminatus	Madura plátano	-trad. Remedy for malaria	-grassroots malaria remedy -closely related to "chanca piedra" species	2	-	-	-	2	**2**
Maytenus laevis	Chuchuhuaz a	-similar uses to chuchuasi;	-caffeine source?	1	-	-	-	1	**1**
Gliricidia sepium	Matarratón	-shade for cocoa; living fence	-source of coumarin?	1	-	-	2	2	**2**
Petiveria alliacea	Anamú	-local medicine	-Cancers, immune function, COX-2? -CNS depression -Brazil studies?	2	-	-	-	3	**2**
Ilex guayusa	Guayusa	-local tea-like beverage	-caffeine source -the "Colombian Mate"	3	3	-	2	3	**3**
Urera caracasana	Ortigo	-local medicine for use in menstrual issues, fever, hemorrhage, poison ivy, syphilis and brain cancer.		1	-	-	1	1	**1**
Ptychopetalm olacoides	Marapuama or Muirapuama	-(Brasil) traditional use sexual stimulant/	-Aphrodisiac products (dietary supplements	3	-	-	-	1	**2**

		tonic	)						
Passiflora incarnata, P. edulis and P. alata	Passion flower, passion fruit, marcuja	-no current use -local markets for fruit -leaves used as traditional medicine -fruit used as traditional medicine and food	- Dietary supplements for leaves and fruit; fruit for foods and functional foods (sedative; kava alternative); women's health	2	2	1	2	1	**2**
Spilanthes (or *Acmella*) *oleracea*	Jambu	-no current use -(Brazil) trad. Use as food and spice, trad. medicine	Possible new dietary supplement; Spice/ condiment or functional food	1	2	1	1	2	**1**
Lippia sidoides	Alecrim or Alecrim-pimenta in Brasil	-no current use -(Brazil) traditional medicine	-Essential oil for industrial applications, natural preservative ?	2	1	2	1 `	1	**2**
Euterpe oleracea	Acai- fruit and wood for hearts of palm	-little current use? -(Brazil) fruit used in local markets and trad. Use for food, and dietary supplement -(Brazil) hearts of palm -(Brasil) traditional medicine and wood source	-Fruit for use in foods as trendy new dietary supplement, flavor, possible color?. -Hearts of palm	3	3	2	2	2	**3**

***Key:**
DS= Dietary Supplement:
FF= Functional Food Ingredients:
FI= Food Ingredients:
C= Cosmetics
GR/GW= Grassroots Native Marketing Retail Strategy/ Grassroots Wholesale Strategy
Overall Score

***Scoring:**
1- WEAK POSSIBILITY—we see some serious obstacles and/or little demand for such a product.
2- AVERAGE POSSIBILITY---we see some good strengths and possible avenues for this product in both the market channels, and in overcoming obstacles to production and marketing.
3- EXCELLENT POSSIBILITY—we see this one as a “winner” the strengths and potentials all outweigh the bad, and we may have even located buyers for this already.

4.1 *Uncaria tomentosa* (Cat's Claw)

Market Data:

The product sold in international commerce is the bark of both the *U. tomentosa* and *U. guianensis*, although *U. tomentosa* is the most desired in the market. This is due to a general belief in the marketplace that *U. tomentosa* has a more favorable alkaloid profile, but this is not agreed upon, nor verified experimentally. There exists small local markets in Peru for furniture made from the lianas. The market for the bark has gone through a heavy increase in 1996, and then a large drop off (see **Table 1**), spurred by concerns in quality and lack of interest in the herb. Although this table does not contain current export volumes of Cat's Claw, it is believed that the trade volumes have not increased significantly, and that they have never reached 1995 levels again. Because of the difficulty in getting Cat's Claw out of Peru, if the plant material could be available from a second country, such as Cat's Claw from Colombia, there would be very strong market demand and interest by buyers seeking a secondary source of this plant product. If done in concert with a QC program, and in a sustainable manner, that could be accomplished in concert with ABSLLC, Chemonics and CAB, then the commercialization opportunities would be very strong, as quality control is a major issue (or the present lack of one in Peru) and the difficulties in working with Peru to procure this product allows a strategic opportunity for those in Colombia.

Table 1. Exportation of cat's claw, according to INRENA*, Peru.

Year	Volume (Kg)
1999†	64,457.20
1998	282,164.00
1997	275,562.00
1996	347,602.00
1995	726,685.00
1994	20,743.00

† values figured through March of that year.
* Instituto Nacional de Recursos Naturales (INRENA), Lima, Peru.

In Peru, INRENA, the natural resource department of the government of Peru, passed legislation in March of 1999 which banned the export of the raw material without the approval of management plans. This halted official trade of the raw material of cat's claw from Peru for several months until management plans began to achieve approval. Now that Peru and Brazil are tightening regulations on export of medicinal plants, there may be opportunity for other countries to enter the market channels. Along these same considerations, we recommend developing production and sourcing guidelines that follow the WHO's lead in developing GAP and GSP (Good Agricultural Practices and Good Sourcing Practices) for medicinal and aromatic plants. We are also recommending whenever possible for the Colombian products to be grown organically, and certified as such to the extent possible.

SWOT Analysis:

STRENGTHS • On-going science; long-term market • One of two very popular herbs out of Peru. This means that the demand for Cat's Claw is probably sustainable in years to come. • The botany of Cat's Claw is also fairly well known, meaning quality distinctions can be made and cultivation should be easier (assuming habitats are compatible and so forth). • Several companies are developing or are considering developing proprietary products from Cat's Claw, meaning that potential cultivation alliances are possible. • Considered allowed for sale as dietary supplement by DSHEA (the Dietary Supplement Health and Education Act)	WEAKNESSES • Difficult to assess the sustainability of harvest • Difficult to know market cycles and strength of long-term market • Not considered GRAS in the U.S. so not allowed in foods in U.S. or other parts of the world markets
OPPORTUNITIES • it is getting difficult to export and do business with these plants in Peru and Brazil—lots of regulations • Contract growing for large extractors/marketers of Cat's Claw, especially if one can guarantee minimum qualities in raw material (content of alkaloids and flavonoids), and possibly certified organic. • Because immune function is basic in	THREATS • lots of competition with Peru and other countries; may lead to market gluts and/or shortages, creating unstable price and trade conditions.

health, it applies to many conditions, and can be included in multiple formulations with many different markets	

Market Channels:
DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

Possible Alliances/Contacts:
Centroflora, IHT or AF Nutraceuticals, CampaMed, BI Nutraceuticals, RFI, other traders of herbs in the US & Europe.

4.2 *Artemisia annua* (Annual Wormwood)

Market Data:
No market data available for this region. No formalized pharmaceutical market for this product in Central and South America. Formal antimalarial products based in part on single extracted compounds from this plant are available in Asia but all raw material sourced in the wild or cultivated in China, and other Asian countries.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Interesting local potential for malaria drug/supplement local markets and local use • Well defined science for malaria application	• Not strong world markets • Unknown regulatory • No pharmaceutical industry seeking this product in the region • Why do this when we have local alternatives to develop for malaria?
OPPORTUNITIES • Only Brazil has a serious program on this plant, but not commercialized there after many years • Grass-roots marketing strategy; for local markets and local health • Maybe formulate with the local herbs that are active against malaria?	THREATS • Lots of competition with Asian countries • Not well known on market no current demand • Concern that local use by itself as a stand alone antimalarial could led to rapid resistance by the plasmodia

Market Channels:
DS- raw and processed as an anti-malaria dietary supplement

C?- as an anti-malarial cream?

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

4.3 *Croton lechleri* (Sangre de Drago)

<u>Market Data:</u>
Steven King, as PS Pharma was very gracious to give us lots of information on their plans and the potential market. PS Pharma (Shaman) holds most of the patents for the medicinal (and supplement) use. There are other niche markets, however, and unstandardized product markets that could be developed, such as use in cosmetics as coloring, “new age” tatoo, a liquid band-aid (like moleskin), a local traveler’s diarrhea product.

PS Pharma has been through many incarnations, and they are currently raising capital to put the drug back into clinical trials in the U.S. They are “certain” that they will get the funding (and they have an excellent track record of procuring such funding), and if it passes clinical (which looks favorable already), it will likely be approved as a drug for traveler’s diarrhea first, then the IDS diarrhea (which is a much larger market). They expect to purchase between 8-10 million dollars worth of latex per year within the 3 or 4 year of commercialization and of course the fast growing tree does grow and is planted in many Coca growing regions of Colombia, Ecuador, Peru and Bolivia. The 8-10 million dollars worth would come from a minimum of 50,000 ha or more and the number of dollars, ha and gallons will grow after the 3 or 4th year of commercialization. Shaman did purchase $200,000 worth of latex in Colombia and worked closely with indigenous cooperative in Putumayo and did have national and regional government permission to export but never managed to get the latex out of the Putumayo region due to FARC controlled roads and in the end someone burned up the storage area where it was being stored.

However a bigger current problem facing the purchase of latex from Colombia, which they would certainly like to do if price was in line, is the extensive spraying that is increasing at this time in the southern rainforest region. The FDA will look very carefully at the origin of the material and if tests show any of the defoliant in the latex or final products no import would be allowed, and Shaman could be put under even tighter scrutiny. They have and will buy from areas of Peru where they have funded reforestation efforts with crop substitution dollars. Steven also noted that they are also focusing on the creation of pediatric low cost version of their product to be developed by non-profit dollars which would be distributed to refugee camps, disaster areas and regions with severe diarrhea related infant mortality. He pointed out these discussion points:

1. AID supports reforestation, in part for the long term pediatric non-profit distribution motive, global responsibility. Also as alternative to Coca production.

2.Costs of production are always highest in the beginning of a fledgling supply industry so AID promotion funding could help move more effectively into large scale reforestation.

3. The risk factor that we do not get approval from FDA for the drug is mitigated by the fact that large areas planted in multi species agroforestry systems will replace coca and provide a diversified risk reduced investment.. The team in this project in concert with local Andean farmers and producers, indigenous communities, and other Columbian researchers should meet to strategically plan the best agroforesty system for the ecological region.

SWOT Analysis:

STRENGTHS • Several interesting market channels, local use, and potential future markets	WEAKNESSES • All patents for medicinal use held by one company (Shaman Botanicals/Pharmaceuticals) • Entire tree may need to be felled for extraction of latex commercially, so need to grow in reforestation/plantation style • Can not be grown in shade—possible weakness for incorporating into coca plantations • Funds not yet in place • FDA approval not yet procured
OPPORTUNITIES • Shaman is raising money for putting this plant back into clinical trials for two diarrhea markets; possible large future need, and takes 7-8 years before harvest, so this could be planted now • Good agroforestry tree; soil improvement for abandoned fields	THREATS • Little current demand in the markets; much competition • Unknown future need by above company • Can not export if there is **any** contamination with defoliant sprays for pharmaceutical use—FDA is strict about this. • If large quantities are planted on speculative future markets, there is no guarantee of markets with Shaman; and may be no other buyers.

Market Channels:

DS- for the dietary supplement market, Shaman Pharmaceuticals/Botanicals owns all the patents for diarrhea markets, but perhaps other markets could be found for other supply relationships. Otherwise, Shaman is aware of our project, and is interested in potential supply.

C- possible additive to lipsticks; “new age” tatoo?

GRR- Local Traveler’s Diarrhea Product; Liquid Band-aid; “new age” tatoo

Possible Leads:

Shaman Pharmaceuticals/Botanicals- Steven King, Vice President

4.4 *Paullinia cupana* (Guarana)

Market Data:

Guarana is 'Hot' in the U.S. and other world markets in foods and supplements as a caffeine source, and for some of the larger, most popular product categories (diet, energy, sports/fitness, sexual performance).

This product is big in Europe for use in cosmetics as a trendy new ingredient, and the use and market is increasing in this area in the U.S.

It was reported in 1999 that over 1000 tonnes of guarana were produed annually, and that figure has risen sharply.

As reported by:
http://www.hort.purdue.edu/newcrop/1492/paullinia.html

The average production of the harvesting phase (1938 to 1970) was 175 tonnes per year, with many fluctuations. In the last five years for which cultivation data are available (1983 to 1987), the average was a little over 1,200 tonnes per year, with about a sevenfold increase over the former statistics. Although an extension of the cultivated area influenced this increase, the rise in productivity per hectare also made a substantial contribution, its average almost doubling between the first five years of the 1970s and the last five years recorded, with averages of 71.5 and 137.8 kg of seed per hectare, respectively. This increase in production can easily be attributed to the new type of management, since in field experiments production data were obtained for the traditional system (79 kg per hectare) and improved system (130 kg per hectare) which were very similar to the averages referred to.

It was estimated by (and un-named) major distributor that they bought at least 20 tonnes of guarana extract yearly (2002). As such, world production must be much greater.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Strong and growing world markets for both food and supplements • Enjoys GRAS status in the US.	• Use and cultivation is giving it near commodity status, meaning it may be difficult to maintain crop values,

• Principal ingredient used in some of the most popular product categories including diet, energy, sports/fitness and sexual performance. • Recent studies have placed Guarana in good light, offering pre-clinical data that is encouraging in many areas. • Broadly cultivated, the agriculture and botany are well known. There are numerous specialists in this area that could assist with this kind of cultivation. • It is a good candidate for certified organic cultivation, because the demand is likely to remain. • Allowed as a dietary supplement by DSHEA in the U.S.	independent of market conditions out of our control. • The price for Guarana products (especially extracts and other semi-finished products for industrialization) is relatively low due to market conditions and product tampering. Many “Guarana” products in the US and Europe are seriously adulterated, some products contain little or no “real” Guarana, and may contain caffeine, maltodextrin and caramel coloring. It is difficult to compete in this kind of market.
OPPORTUNITIES • Brazil and Peru are becoming difficult countries to source natural products= possible opportunity for second source of supply for companies • Development of unique, high quality, cultivars that may attract additional value to raw material. • Development of new products that may have some new application potential. • Development of a high quality end-product is needed. • Contract growing for processing companies, nutritional companies and food/beverage companies • Marketing opportunities with trading groups and organizations (especially sustainable trade groups). • Development opportunities with certified organic products. • Development potential as the new coffee, tea, chocolate or chai.	THREATS • Much adulteration of products on markets/ low price of extracts • Competition with Brazil and other countries; Most Guarana is grown in Brazil, where there are formal and informal trade channels. It may be difficult to develop trade around these channels. • If no germplasm exists in Colombia currently, may be difficult to obtain.

<u>Market Channels:</u>

DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

FF- Functional foods as a source of caffeine, and for energy, aphrodisiac, weightloss products/foods/beverages

C- In cosmetics it is a trendy new ingredient; Caffeine used to reduce puffiness of skin (in creams, lotions, etc.)

<u>Possible Alliances/Contacts:</u>

Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others
Extractors – Centroflora, Euromed, and others
Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others
Food and Beverage Companies – Pepsi, Arizona Teas, and many others

4.5 *Tabebuia avellanedae* (Pau d'Arco)

Market Data:
No market data

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Much interesting science building and confirming medicinal supplement use. • Has been used in tea/beverage formulations, so may be possible in functional food markets • It has been in commerce for a long time in the US and Europe. • It is an accepted supplement by many traditional natural products shoppers • The market is mature. • Has applications in the Tea industry. • Some fairly good science with respect to its safety and efficacy. • The wood has commercial applications as lumber. • It may be cultivated in large scale with interesting agro-forestry projects.	• Needs to be produced sustainably; and spray-free for food and pharma products • Very little value in the bark trade. • Most trade is from wood mill "sweepings", difficult to compete with that.
OPPORTUNITIES	THREATS
• Because of strong science, markets are bound to increase • Possible agro-forestry projects. • Sustainable trade opportunities.	• Not large demand currently in world; unknown in recent future • There may be little value in a sutainable bark product. • Industry perception of poor quality products, and over-harvest of materials • Competition with other countries

Market Channels:
DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

FF- Does not have GRAS status, but can be used in teas when labeled as supplement.

Pharma- may have pharmaceutical market applications in the future

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Beverage / Tea Companies

Possibly some Pharmaceutical Companies- Pfizer?

4.6 *Pilocarpus jaborandi* (Jaborandi)

Market Data:
Although it has a longer tradition of medicinal use, since 1876 jaborandi has been used in opthalmology. For many years, Merck Pharmaceuticals has held the patent for pilocarpine from jaborandi for use in opthalmology, for reducing intra-ocular pressure. Merck's patent on jaborandi is set to expire very soon (this year?), and this will open up the market to other pilocarpine pharmaceutical product brands, and many new channels of supply.

SWOT Analysis:

STRENGTHS • New opportunity in pharma markets • Possible new markets in dietary supplement	WEAKNESSES • unknown toxicity for dietary supplement markets
OPPORTUNITIES • possible ephedra replacement for dietary supplement market • Merck pharmaceutical's patent has expired, so now this opens up market to many other pharmaceutical companies (for pilocarpine)	THREATS • Absolutely has to be produced spray-free; zero tolerance by the FDA for import.

Market Channels:
DS- dietary supplement as extract probably standardized to pilocarpine content (and potentially pilocarpine-free in the future due to safety considerations)
Pharma- pharmaceutical products with pilocarpine as active ingredient.

Possible Leads:
Centroflora currently owns the largest (previously Merck owned and operated) plant in Brazil for Jaborandi/Pilocarpine production—they are a competitor, but there may be *some* possibility for collaboration.
Pharma Companies interested in doing pilocarpine production.

4.7 *Plectranthus barbatus* (Indian coleus)

Market Data:
No market data

The market data on this species would be based on the extractable natural plant product, forskolin.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Possible source of forskolin in strong pharma markets and strong dietary supplement market for ephedra replacement • Strong science on forskolin indicates strong potential growing markets	• Unknown future growth of markets and potential for forskolin
OPPORTUNITIES	THREATS
• Forskolin is being produced by companies for ephedra replacement in dietary supplement market in the U.S.	• Other sources of forskolin on markets currently

Market Channels:
DS- as a weightloss/ energy/ thermogenic supplement

Pharma- possibly for pharmaceutical use of forskolin

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

* Sabinsa seems to be leading the market with forskolin as a thermogenic. This has real potential in that industry as an ephedra replacement.

4.8 *Phyllanthus niruri* (Chanca piedra)

Market Data:
No market Data- market is thus far assumed to be small.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Strong science indicates possible strengthening in future markets • Strong traditional use basis, for treatment of kidney and bladder stones. Also has traditional use as a diuretic.	• Little current demand for this product in world market • Little consumer awareness of this product
OPPORTUNITIES	THREATS
• Allowed for sale on dietary supplement market, and no other strong product for this health indication • Potential Development as both local and export medicines. • It may become popular, so supplying manufacturers could be interesting. • Potential for clinical development.	• Competition with other countries/producers • Lack of interest in the marketplace; little awareness of the use of natural products for this health indication.

Market Channels:
DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

Pharma- possibly a potential for pharmaceutical development?

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Possibly some Pharmaceutical Companies

4.9 *Momordica charantia* (Bitter Melon)

Market Data:
No market data; with India serving as the leading source.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Strong science indicates possible strengthening in future markets • Area of diabetes/hypoglycemia is growing exponentially; much need for natural hypoglycemic agents • Good plant for local use	• Not allowed in foods in the U.S. currently • Very strong flavor; undesirable for U.S. food products
OPPORTUNITIES	THREATS
• Maybe will be allowed in foods in U.S. in the future due to strong traditional food use. • Potential for use of hypoglycemic agents in the strong world markets for diet/weight management supplements • Re-application of GRAS status could make this a popular functional food ingredient • Recently found to have moderate anti-malarial activity (local markets and grass roots approach?)	• Strong competition for this plant already in other parts of the world • Little demand for world production • Not allowed for use in food in the U.S. currently. May be re-application which will allow this in foods in future—but it is uncertain.

Market Channels:
DS- dietary supplements

FF- possibly foods if there is re-application of GRAS status

GRR- grassroots malaria many infectious diseases and a powerful weapon against human immunodeficiency virus (HIV).

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Possibly some Pharmaceutical Companies

4.10 *Bixa orellana* (Annatto)

<u>Market Data:</u>
- Hundreds of Tons are sold into the U.S. annually. The world production of annatto is estimated at: 10,000 tonnes annually
- International Trade is estimated at 7,000 tonnes annually

Reference: http://www.fao.org/docrep/V8879E/V8879e04.htm

Major exporters are Peru and Kenya, and the major importers are USA (and Canada) (2,500 tonnes annually), Western Europe (2500 tonnes annually), and Japan (1,500 tonnes annually).

This is a world commodity, and competition is fierce. RFI said they may be interested in a strategic alliance if we were able to produce a good base. The only way to compete in Annatto food ingredient business is to develop the base overseas (in Colombia), and then ship to the U.S. for blending, otherwise shipping is too expensive to compete. RFI currently sells 50-100,000 pounds annually, and could do more if they had a good alliance. We met with this company both prior to after the Bogota Worshop and they would be interested in developing contractual relationships to procure this product in Colombia as part of this project.

<u>SWOT Analysis:</u>

STRENGTHS • Commodity market – stable market • Broadly accepted as a natural color. • Recognized as GRAS. • Many opportunities in near future markets • Broadly cultivated throughout Central and South America. • Rich tradition of use in Central and South America. • Variety of different uses in several different industries.	WEAKNESSES • Low price because of commodity markets • Not many people get excited about trading in annatto, less number of trade opportunities • More product development needs to happen to assess potential in developing other markets • Potential for heavy competition.
OPPORTUNITIES • Potential in several other markets; • Opportunity for developing paints, cosmetics, foods, supplements, etc. • Allowed for food use in the U.S.; so potential for other natural product markets that are growing like functional foods and cosmetics	THREATS • Much competition and price fluctuations • Unknown potential for other markets;

• Organic or Sustainable Cultivation, leading to higher value marketing. • As an organic colorant, there aren't that many options in certified organic colors.	

Market Channels:
DS- for carotenoid source

FI- natural dye for foods

FF- possible carotenoid source; natural food color

C- natural dye for cosmetics; currrently sold in hair products (color conditioners); lipstick and cosmetic natural color

GRR- "new age" tatoo?; natural dye

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies –

Food and Beverage Companies – especially organic food companies

Cosmetics Companies – Aveda, and other natural/organic cosmetic companies

4.11 *Phyllanthus acuminatus* (Madura plátano)

Market Data:
No data

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Anti-malaria and anti-cancer activity.	• Unknown to world markets.
OPPORTUNITIES	**THREATS**
• Recently found to have moderate anti-malaria activity (2000) • Opportunity to become an "Exclusive Colombian" plant?	• Unknown regulatory status

Market Channels:
DS- as a dietary supplement, assuming it is allowed through regulations

GRR- grassroots malaria remedy for "Exclusive Colombian" approach?

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Possibly some Pharmaceutical Companies

4.12 *Maytenus laevis* (Chuchuhuaza)

Market Data:
No data

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Anti-tumor and anti-inflammatory activity confirmed • Not much science, not well known • Chemical activity of the extract has been elucidated	• Unknown to world markets • Unknown consumer awareness
OPPORTUNITIES • Opportunity to become an “Exclusive Colombian” plant?	THREATS • Unknown regulatory status

Market Channels:
DS- as a dietary supplement, assuming it is allowed through regulations

GRR- grassroots remedy for “Exclusive Colombian” approach?

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Possibly some Pharmaceutical Companies

4.13 *Gliricidia sepium* (Matarratón)

Market Data:
No data on this particular species. See market data on Tonka Bean, Section III.

More Market Data for Coumarin, adapted from:
http://www.unb.br/iq/labpesq/lateq/projetos_concluidos_itto_relatorio.htm

The coumarin market has decllined significantly in the past two years. It is still used as a fixer or stabilizer in perfumes, from the cumarina, and is also used as an aromatic agent in cigarettes, whiskies and chocolate. Presently, its demand is intermittent, based on actual orders: the buyer contacts a middle man in Santarém, who then makes an order with the collector in the forest.

In the forest, according to collectors, the stock of the product is great, and may be commercialized whenever there is a demand for it. The collector makes between US$0.70 - 1.00 per kilo de cumarú sold (two years ago prices were around the double, US$ 1.50 to US$ 2.00). The wholesaler, situated in Santarém, sells the product to the exporter for US$1.40 to US$ 2.00 per kilo.

A more thorough study of the cumarú market could help understanding how it might be possible to stimulate the demand, possibly by finding market niches for this very specialized natural product. One of the short time specific studies of this Project is related to cumarú processing which could aggregate value to the product in the region, obtaining better market prices and increasing the demand.

SWOT Analysis:

STRENGTHS • Source of coumarin • CNS depressing effects confirmed by science	WEAKNESSES • Unknown to world markets
OPPORTUNITIES • Opportunity to become an “Exclusive Colombian” plant? • Local and agroforestry uses	THREATS • Unknown regulatory status for many market channels, and declining popularity of coumarin

Market Channels:
DS- as a dietary supplement, assuming it is allowed through regulations

GRR- grassroots remedy for “Exclusive Colombian” approach?

GRW- grassroots plant for wholesale ingredient?

C- in cosmetic ingredients and food ingredients (see markets for Tonka Bean)

Possible Alliances/Contacts:

Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Possibly some Pharmaceutical Companies

4.14 *Petiveria alliacea* (Anamú)

Market Data:
No data

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Studies in progress in Brazil? • Anti-cancer, anti-diarrheal, immune stimulation, COX-2 activity, CNS depression confirmed by science	• Unknown to world markets
OPPORTUNITIES	THREATS
• Opportunity to become an "Exclusive Colombian" plant? • Interesting to pharma companies? • A new dietary supplement against listeriosis (on FDA's top bad bug list)?	• Unknown regulatory status

Market Channels:
DS- as a dietary supplement, assuming it is allowed through regulations;

anti-listeriosis remedy?

GRR- grassroots remedy for "Exclusive Colombian" approach?

FI- anti-listeria food ingredient/anti-microbial? Not allowed by GRAS status but maybe in processing equipment?

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Possibly some Pharmaceutical Companies

4.15 *Ilex guayusa* (Guayusa)

<u>Market Data:</u>
No data on this particular species, but significant market opportunities based upon its natural products.

Liken potential market to Guarana and Yerba Mate. Here, we are recommending developing a new product, 'Colombian Mate'.

<u>SWOT Analysis:</u>

STRENGTHS	WEAKNESSES
• Because of traditional food use, could make a case for developing in functional food markets in U.S. • Local markets • Great story for grass roots marketing route	• Unknown to world markets • Unknown future potential
OPPORTUNITIES	THREATS
• Exciting possibility of developing into "Colombian Mate" with story attached • Opportunity to become an "Exclusive Colombian" plant? • May be allowed in foods due to traditional food use? • With Yerba Mate coming from a related species we may be able to market through that channel	• May not be allowed for sale by U.S.; we would have to make a case for traditional food use or see if has already been sold before 1994 as supplement.

<u>Market Channels:</u>
DS- for diet/ energy/ weight management supplements. Aphrodisiac?

FF- may be allowed in foods if strong traditional food use exists

GRR-GRW- exciting possible "Colombian Mate" with story attached

<u>Possible Leads:</u>
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Food and Beverage Companies – Pepsi, Arizona Teas, and many others

4.16 *Urera caracassana* (Ortigo)

Market Data:
No data

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Insuffucient information base	• Unknown to world markets
OPPORTUNITIES • Opportunity to become an “Exclusive Colombian” plant?	THREATS • Insufficient information base

Market Channels:
DS- as a dietary supplement, assuming it is allowed through regulations
GRR- grassroots remedy for “Exclusive Colombian” approach?

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others
Extractors – Centroflora, Euromed, and others
Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others
Possibly some Pharmaceutical Companies

5. Spice Plants

Spices:

***Curcuma longa* (Turmeric)**
***Zingiber officinale* (Ginger)**
***Hibiscus sabdariffa* (Roselle)**
***Cinnamonum* spp.(Cinnamon)**
***Stevia rebaudiana* (Stevia)**
***Tamarindus* (Tamarind)**

Scientific Name	Common Name	Local & Trad. Uses	Our Use	DS *	FF *	FI *	C *	GR /GW*	O*
Curcuma longa	Turmeric	-no local use -trad. Use- spice, traditional medicine	-spice, food colorant, source of cucurmin (supplement)	2	2	2	1	2	3
Zingiber officinale	Ginger	-Spice, food	-spice, EO, food	2	2	2	1	2	3
Hibiscus sabdariffa	Roselle	-Drink, medicinal, ornamental, fibers.		1	1	1	1	2	2
Cinnamonu m	Cinnamon	- spice -traditional antidiabetic remedy -antibacterial	-spice, EO	2	2	2	1	2	2
Steveia rebaudiana	Stevia	-sweetener	-sweetener	2	1	2	1	1	3
Tamarindus	Tamarind	-fruit, condiment, starch.	-	1	1	2	1	2	1

*Key:
DS= Dietary Supplement; FF= Functional Food Ingredients; FI= Food Ingredients; C= Cosmetics; GR/GW= Grassroots Native Marketing Retail Strategy/ Grassroots Wholesale Strategy; O=Overall Score

*Scoring:
1- WEAK POSSIBILITY—we see some serious obstacles and/or little demand for such a product.
2- AVERAGE POSSIBILITY---we see some good strengths and possible avenues for this product in both the market channels, and in overcoming obstacles to production and marketing.

3- EXCELLENT POSSIBILITY—we see this one as a “winner” the strengths and potentials all outweigh the bad, and we may have even located buyers for this already.

5.1 *Curcuma longa* (Turmeric)

Market Data:
The plant is a large-leaved herb, closely related to ginger. It is cultivated in tropical countries for the thick, rounded, underground stems or rhizomes, which constitute the spice, turmeric. Turmeric contains oil, which consists in part of curcumin. The rootstocks of turmeric, both fresh and dried, are also used as flavoring in curries and other cookery. By far the largest quantity of turmeric cultivated is used as a condiment, it is a major ingredient of "curry powder", but it is also used in medicine, cosmetics and in the dyeing of fabrics. The color is due to curcumin and the scent to a complex of essential oils.

Product forms traded internationally: whole and powdered spice; the oleoresin and "pure curcumin".

World production: Not quantified for the spice but possibly tenfold or greater than international trade (15,000-20,000 tons per annum for the spice and 100-150 tons for the oleoresin).

Exporters: India (dominant), China and numerous smaller suppliers in Asia, Latin America and some in Africa.

Major importers: Iran, North America, Western Europe and Japan.

US Import Statistics 1994-1997 - Turmeric (Kg)

	1994	**1995**	**1996**	**1997**
India	1,679,162	1,910,107	2,091,403	1,953,936
Fiji	22,620	28,781	40,802	47,711
Jamaica	0	0	2,643	14,614
Turkey	13,000	0	0	9,000
Guatemala	0	0	0	6,115
Thailand	5,997	14,379	7,423	5,586
Pakistan	0	1,294	1,872	1,699
China	3,150	3,598	1,125	984
Bangladesh	0	0	0	909
Other	5,210	74,487	30,610	2,916
Total	**1,729,139**	**2,032,646**	**2,175,878**	**2,043,470**

Source: http://www.marketag.com

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Established varied international market (spice, oleoresin, curcumin and colorant) • On-going science - growing interest in the health benefits.	• Uncommon in western dishes. • Traditional processors control the market. • New crop to Colombia. • Annual, can not be cultivated as mono-crop.
OPPORTUNITIES • As medicinal and food supplement • As final product (pure or semi-pure curcumin). • Expanded market opportunities	THREATS • None, except for competition from other countries

Market Channels:
DS- Dietary Supplement as raw or processed or extracts (simple or standardized), especially DS that are based on newly scientific discoveries. Has a strong potential to become a functional food ingredient.

Possible Alliances/Contacts:
Some dealers in turmeric and/or turmeric oil include:

Campbell Chemical Co.
7012 Golden Gate Drive
Cincinnati, OH 45244
(513) 231-5659

Sabinsa Corp.
1406 Merrywood Dr.
Edison, NJ 08817
(908) 572-7326

Penta Manufacturing Co.
P.O. Box 1448
Fairfield, NJ 07007
(201) 575-7475

D. Steengrafe & Co., Inc.
26 Broadway
New York, NY 10004
(212) 269-2846

5.2 *Zingiber officinale* (Ginger)

Market Data:
World-wide, ginger is among the most important and valued spices. Today, the plant grows in tropic regions all over the world and plays part in the local cuisines. Ginger is sold as dry roots (whole or powder) and fresh ginger (also called green ginger) that is now easily available in Western countries. Ginger oil is also sold in the markets, as is the oleoresin in ginger. When the US importation of ginger is reviewed (see Table below), you'll note that neither Ecuador and Nicaragua had exports to the US prior to 1992, yet since 1993, both countries became new sources of ginger production. We see this as an example of how Colombia can also become a new source of ginger.

US Imports of Ginger, Volume (Kg)					
Kilograms	**1992**	**1993**	**1994**	**1995**	**1996**
Costa Rica	670,332	1,058,245	1,045,248	2,290,927	4,916,982
Brazil	1,160,499	1,799,414	2,660,067	2,833,032	2,387,944
China	587,954	446,542	4,966,657	6,345,053	1,885,017
Nicaragua	**0**	**45,904**	**9,568**	**272,968**	**1,104,460**
India	1,648,884	1,145,350	927,265	158,234	564,573
Ecuador	0	57,878	290,457	335,149	537,184
Fiji	1,486,873	730,798	533,636	596,713	536,334
Thailand	502,708	265,293	927,077	924,667	507,969
Guatemala	131,776	104,418	66,477	186,688	503,725
Honduras	69,535	37,523	150,250	76,595	429,718
Nigeria	446,191	425,913	260,675	129,986	203,534
Singapore	56,880	38,064	4,429	26,598	54,242
Hong Kong	1,565	7,255	130,813	20,244	42,569
Indonesia	1,293,260	1,797,782	2,439,420	920,021	37,240
Dominican Republic	17,000	5,219	5,874	0	18,813
RSA	0	0	3,290	41,670	15,400
Vietnam	0	0	0	0	12,445
Jamaica	49,883	19,919	15,444	10,780	9,003
China (Taiwan)	30,549	52,372	34,817	26,609	2,674

Source: http://www.fintrac.com/gain/tradestats/usa/archives/ginvol.htm

US Import Statistics 1997 - Ginger (Kg)

Supplier	**1997**
Costa Rica	3,604,818
Brazil	2,827,602
India	1,792,698
Nicaragua	**1,187,751**
Honduras	1,169,801
Thailand	803,514
Guatemala	695,543
Fiji	503,336
China	289,137
Indonesia	37,240
Hong Kong	28,495
South Korea	20,000
Japan	18,681
Taiwan	7,026
Singapore	3,900
Malaysia	2,561
Philippines	223
Vietnam	0
Other	851,976
Total	**13,844,302**

Source: http://www.marketag.com

European Imports of Ginger, 1991-1995, Volume (Metric Tons)

Supplier	**1991**	**1992**	**1993**	**1994**	**1995**
China	1,415	1,176	1,273	2,594	3,335
Brazil	2,395	2,408	3,516	2,961	2,666
Thailand	596	2,355	880	1,037	1,745
Costa Rica	1,464	816	852	889	1,307
Nigeria	1,361	2,212	1,675	1,474	973
South Africa	499	542	363	283	703
Other	2,857	2,279	2,327	2,271	2,067
Total	10,587	11,788	10,886	11,509	12,796

Source: Eurostat

From these data tables we can learn that possibilities are available for new suppliers to compete with traditional ones. For example Nicaragua sold no ginger to the USA in 1992 started to export small amounts in 1993 and by 1996 became a major ginger supplier to the USA.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Market is highly developed • Product is in high and stable demand	• Traditional strong competitors • No uniqueness • New crop to Putumayo
OPPORTUNITIES	**THREATS**
• Low chances for new qualities • Development of ginger oil industry	• Strong traditional growers with high quality.

Market Channels:
Active market for fresh and dry spice and essential oil.

Possible Alliances/Contacts:
The following selected companies deal in ginger and/or ginger products:

Berje Chemical Products, Inc.
5 Lawrence Street
Bloomfield, NJ 07003
(201) 748-8980

International Sourcing Inc.
121 Pleasant Avenue
Upper Saddle River, NJ07458
(201) 934-8900

Bio-Botanica Inc.
75 Commerce Drive
Hauppauge, NY 11788
(516) 231-5522

Meer Corp.
9500 Railroad Avenue
North Bergen, NJ 07047
(201) 861-9500

Botanicals International, Inc.
Div. of Zuellig Botanicals, Inc.
2550 El Presidio Street
Long Beach, CA 90810
(213) 637-9566

Penta Manufacturing Co.
P.O. Box 1448
Fairfield, NJ 07007
(201) 575-7475

5.3 *Hibiscus sabdariffa* (Roselle)

<u>Market Data:</u>
The primary import markets for the dried calyx of *Hibiscus sabdariffa* are the United States and Germany. England is not a regular importer of the product as imported herbal tea from Germany satisfies most market demand. Hibiscus is available from Thailand, Sudan, China, Mexico, and various other smaller producing nations including Egypt, Senegal, Tanzania, Mali, and Jamaica. China is the dominant supplier to the US according to importers surveyed. Thailand, Mexico and Egypt supply smaller amounts of hibiscus. The preference is for Sudanese product, but the US trade embargo on the Sudan has forced importers to source Sudanese product via Germany and at a considerable mark-up.
Sudan dominates the German import market. German herbal tea manufacturers consider Sudanese hibiscus to have the perfect color blend and taste for herbal tea bases, but also source hibiscus from China and Thailand and much smaller quantities from Egypt and Mexico. Germany is the worlds largest buyer of hibiscus.

Prices are not stable and depends on quality and supply.

Table 5: Price Ranges for Dried Hibiscus (CIF, US$ per Metric Ton), 3/97-4/98

Supplier	Liquid Color	Liquid Taste	US	Germany
China	Dark purple	Tart	$800-$1,000	$900-$1,000
Sudan	Orange-red	Acidic	$1,500-$1,700	$1,200-$1,300
Thailand	Purplish-red	Sweet	$1,000-$1,200	$1,000-$1,100
Mexico	Orange-red	Salty	$600-$700	No quote
Egypt (organic)	Burgundy red	Acidic	$1,200-$1,500	No quote

Source: Interviews with importers

Source: ASNAPP web site (www.asnapp.org)

SWOT Analysis:

STRENGTHS • Multifunctional plant (Roselle for tea and stems for fibers) • Easy to produce, process and dry	WEAKNESSES • New crop to Putumay • Unstable prices
OPPORTUNITIES • Food supplements industry with strong scientific background. • Final tea product.	THREATS • Strong traditional growers with high quality. • Strong competition from other areas which can produce hibiscus at the same harvest window.

Market Channels:
New scientific discoveries (lowering blood pressure) may increase demand for hibiscus tea.

Possible Alliances/Contacts:
Some dealers in hibiscus flowers include:

Biobotanical International, Inc.
Div. of Zuellig Botanicals, Inc.
2550 El Presidio Street
Long Beach, CA 90810
(213) 637-9566

Lebermuth Co., Inc.
P.O. Box 4103
South Bend, IN 46624
(219) 259-7000

Whole Herb Co., Inc.
P.O. Box 1085
Mill Valley, CA 94942-1085
(415) 383-6485

5.4 *Cinnamonum* spp. (Cinnamon)

Market Data:

Cinnamon is widely used in foods, flavorings, and in pickling, preserves, pudding, flavorings, and stewed fruit. In ground form, the largest end use is in baking followed by confectionery and beverages. Cinnamon leaf oil (primarily eugenol is inexpensive) and cinnamon bark oil (rich in cinnamic aldehyde is expensive) are also traded in the market.

US Import Statistics 1994-1997 -Cinnamon & Cinnamon-Tree Flowers (Kg)

	1994	1995	1996	1997
Indonesia	14,415,510	13,984,871	15,176,627	15,814,968
China	437,497	317,967	542,245	427,160
Germany	30,304	32,457	50,642	55,467
Sri Lanka	674,027	708,355	707,320	708,708
Hong Kong	48,129	9,204	22,084	23,671
Canada	1,638	3,690	2,085	21,937
Netherlands	17,662	20,638	3,747	3,494
India	123,111	167,714	204,727	30,800
Italy	15,000	0	0	1,215
South Korea	268	420	2,410	21,361
Singapore	15,000	4,956	8,000	30,000
Taiwan	5,050	1,045	2,038	0
Thailand	3,773	12,789	31,649	1,671
Vietnam	76,702	302,687	341,920	354,034
Other	66,618	39,817	2,998	293
Total	**15,930,289**	**15,606,610**	**17,098,492**	**17,494,779**

Source: http://www.marketag.com

Vietnam serves as a good example how a newer country can penetrate, expand and become a major producer. This is in part due to their low collecting costs, the very high quality of cinnamon produced in this country (due to the very rich content of cinnamic aldehyde) penetrated into this market, the focus of developmental efforts in expanding this product for export. Note that many non-producing countries such as Germany, Hong Kong, Netherlands, Italy, South Korea, Singapore, and others buy from producing nations, then further process the product and later export into the US and appear as country of origin of the product, rather than country of origin of shipment into the USA.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Established international market •	• New crop to Putumayo • Can takes four to five years till first

	harvest, though some groups are able to harvest bark much sooner. Fewer years may led to lowered cinnamicaledhyde contents.
OPPORTUNITIES • Development of EO industry	THREATS • Other competiting countries

Market Channels:
Spice market and EO (both bark and leaves) markets.

Possible Alliances/Contacts:

Berje Chemical Products, Inc.
5 Lawrence Street
Bloomfield, NJ 07003
(201) 680-748-8980

Meer Corp.
9500 Railroad Avenue
North Bergen, NJ 07047
(201) 861-9500

Penta Manufacturing Co.
P.O. Box 1448
Fairfield, NJ 07007
(201) 575-7475

Polarome Mfg. Co., Inc.
200 Theodore Conrad Drive
Jersey City, NJ 07305
(201) 309-4500

5.5 *Stevia rebaudiana* (Stevia)

Market Data:

Sweetening agents are estimated to be 150 to 300 times stronger than cane sugar and yet soluble in water. It is assumed to be valuable as a sweetener for persons suffering diabetes. Stevia has a strong potential in European markets however it is not 'favorable' product in the USA but still available for sale as a dietary supplement. Prices vary and no solid market data was available to us.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Allowed for sale as dietary supplement in the U.S. by DSHEA; therefore, companies sell as sugar substitute, but disguise it as a supplement (by labeling) • Due to regulatory allowance of Stevia under DSHEA, it is o.k. to make structure/function statements on Stevia products labeled as supplements. One that is common: "Normalizes Blood Sugar"	• Not considered GRAS in the U.S., so not allowed in food products • U.S. governmental agencies are aware and not favorable for use of this herb • The company mentioned below with the patent uses methanol in their process, which is not allowed in foods.
OPPORTUNITIES	THREATS
• There are still opportunities to make better tasting products from Stevia (there is one company in Alberta that holds a patent for purification of one Steviaside that takes out off-notes—they have licensed the rights for growing it to people in Canada and for one company in U.S., but nobody yet in S. America). This would be a great way to make a distinction. • May be way to get around their patent or license.	• FDA may disallow Stevia products that look too much like sugar (packaged in sugar packets, "sugar" cubes, etc.

Market Channels:

DS- used as sugar substitute and sweetener, but not allowed as food in the U.S., so it is labeled as a dietary supplement.

FF- not allowed officially in foods, but used commonly to sweeten teas labeled as supplements

Pharma- may be interesting to some Pharmaceutical companies.

Possible Alliances/Contacts:

Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Beverage / Tea Companies

Possibly some Pharmaceutical Companies

5.6 *Tamarindus indica* (Tamarind)

Market Data:

Tamarind (*Tamarindus indica*) is one of the important tree legumes in tropical and sub-tropical countries. The kernel protein is rich in lysine, glutamic acid, aspartic acid glycine, leucine and methionine. Kernel powder serves in the starch industry.

Tamarind Kernel Powder prices range from 250 to 380 USD/t FOB depending on the mesh size.

USA imported several hundreds tons of fruits and paste worth around $1,000,000/year.

SWOT Analysis:

STRENGTHS • Highly nutritious kernel	WEAKNESSES • Low demand in the American market
OPPORTUNITIES •	THREATS •

Market Channels:

Beverages industry.

Local markets.

Possible Alliances/Contacts:

Dealers in tamarind and/or tamarind extract include: (DAD)

Bio-Botanica Inc.
75 Commerce Drive
Hauppauge, NY 11788
(516) 231-5522

Meer Corp.
9500 Railroad Avenue
North Bergen, NJ 07047
(201) 861-9500

Chart Corp.
787 E. 27th Street
Paterson, NJ 07504
(201) 345-5554

5.7 Spices as essential oils

Curcuma longa (Turmeric)
Zingiber officinale (Ginger)
Cinnamonum spp. (Cinnamon)

Scientific Name	Common Name	Local & Trad. Uses	Our Use	DS*	FF*	FI*	C*	GR/ GW*	O*
Curcuma longa	Tumeric, turmeric, Indian saffron, Yellow ginger	Essential oil Aromatherapy: -stimulate metabolism, invigorating Fragrance: -used in 'oriental' type fragrances Cosmetic: -coloring used as body paint in traditional ceremonies Topical medicinal: -Bruises, sprains and wounds. turmeric blended with oil is applied topically for pain relief, and wound healing. -antiseptic properties, cleansing and toning effects on skin -reported UV radiation absorber -reported antioxidant	• Powdered root for spice • Essential oil for aromatherapy and possible cosmetic ingredient	-	-	2	2	2	2
Zingiber officinale	Ginger	Essential oil: Aromatherapy: -stimulate metabolism, invigorating Fragrance/Flavor: -used in 'oriental' type fragrances -extensively employed in all major food categories, alcoholic and soft drinks.	• Essential oil for flavor and fragrance and cosmetics industries • Reduces motion sickness without drowsiness	1	2	3	2	3	3

		Topical medicinal: -Arthritis, fatigue, muscular aches and pains, poor circulation, rheumatism, sprains. -antiseptic properties, cleansing and toning effects on skin.							
Cinnamonum zeylanicum	Cinnamon	Essential oil: Fragrance/Flavor: -Leaf oil used in perfumes, soaps and toiletries. -Leaf and bark used in food flavoring. Medicinal: -Leaf and bark oil: used in nasal sprays, cough syrups, and dental preparations.	• Leaf essential oil for fragrance, cosmetic, and flavor industry • Bark essential for spice industry	-	-	-	3	2	2.5
			•						

***Key:**
DS= Dietary Supplement:
FF= Functional Food Ingredients:
FI= Food Ingredients:
C= Cosmetics
GR/GW= Grassroots Native Marketing Retail Strategy/ Grassroots Wholesale Strategy
O= Overall Score

***Scoring:**
1- WEAK POSSIBILITY—we see some serious obstacles and/or little demand for such a product.
2- AVERAGE POSSIBILITY---we see some good strengths and possible avenues for this product in both the market channels, and in overcoming obstacles to production and marketing.
3- EXCELLENT POSSIBILITY—we see this one as a “winner” the strengths and potentials all outweigh the bad, and we may have even located buyers for this already.

5.7.1 *Curcuma longa* (Turmeric)

Market Data:
No market data available. Turmeric is a minor essential oil and is used primarily in Ayurvedic medicine and aromatherapy. Suppliers of turmeric oil were hard to locate, however, suppliers for curcumin (one of its main medicinal compounds) were more abundant. See more information on tumeric in the spice section.

STRENGTHS	WEAKNESSES
• Several market channels- spice, medicinal, aromatic • In Colombia and suitable for Putumayo region	• Limited use in fragrance industries • Limited use in cosmetics industry- more development work needs to be done to market its benefits.
OPPORTUNITIES • Potential for more increase use in cosmetics industry as anti-oxidant (skin benefits, potential natural preservative) and UV protector- probably need a industry research collaboration. • Potential market for topical pain relief medicines • Extraction of root powder for essential oil, added value product	THREATS • Other low cost producers in market; India, others?

Market Channels:
FI- powder perhaps tinctures and extracts for medicinal use.

C- essential oil for flavor, fragrance and cosmetics industry

Potential UV protecting ingredient, and anti-oxidant in cosmetics

Body paint- temporary tattoo

Possible Alliances/ Contacts:
Bio-botanica, Premier Specialties, Dragoco, Aveda, Carrubba, Shaw Mudge, Fragrance Resources, Manheimer

5.7.2 *Zingiber officinale* (Ginger)

Market Data:
Wholesale prices of ginger essential oil range from $6.56/oz for high quality ginger from China, to $19.25/oz for certified organic material from Madagascar. (Source: Essential Oil University-Wholesale prices for September 2002, www.essentialoils.org)

STRENGTHS • Fills several market channels- spice, medicinal, flavor and fragrance • Multi-use herb, many benefits to the body, easy for consumers to understand and incorporate into their lives. • Recent 'Asian' trend has strongly increased ginger usage in fragrances, food, confections, medicine. • In Putumayo already- does well in region and communities familiar with crop.	WEAKNESSES • Not widely used in aromatherapy industry
OPPORTUNITIES • Multi-market channel distribution for essential oil • Low cost production could be competitive • Organic production would command higher price and demand is there for certified organic ginger oil.	THREATS • Competition from other low cost producers- primarily Asia • Competition for certified organic oil from Madagascar.

Market Channels:
DS, FF, FI- whole herb for teas; powder, tinctures and extracts for medicinal use.

C- essential oil for flavor, fragrance and cosmetics industry

Possible Alliances/ Contacts:
Celestial Seasonings, Bio-botanica, Dragoco, Aveda, Belmay, Carrubba, IFF, Shaw Mudge, Floressence, Fragrance Resources, Manheimer

5.7.3 *Cinnamonum* spp. (Cinnamon)

Market Data:
Cinnamonum is a large genus, with several notable species of which yield a volatile oil upon steam or hydro-distillation. The composition of the oil, and therefore its value and the use to which it is put, depends very much on the species, age and distillation employed. In addition, different plant parts yield distinct oils. The most important *Cinnamonum* oils in world trade are those from *C. zylendricum*, *C. verum* (cinnamon bark and leaf oils), *C. cassia* (cassia oil) and *C. camphora* (sassafras and Ho leaf oils). The latter species provides oils, which are utilized as sources of chemical isolates.

Cinnamon bark oil possesses the delicate aroma of the spice and a sweet and pungent taste, its main component is cinnamic aldehyde. It is employed mainly in the flavoring industry where it is used in meat and fast food seasonings, sauces and pickles, baked goods, confectionery, cola-type drinks, tobacco flavors and in dental and pharmaceutical preparations. Perfumery applications are far fewer than in flavors because the oil has some skin-sensitizing properties, but it has limited use in some perfumes. Cinnamon bark oil is considerably more expensive than the leaf oil, rich in eugenol and without cinnamic aldehyde, and probably among the higher priced essential oils.

The following information was obtained in a 1996 FAO report on potential non-wood forest products where they reviewed the markets for cinnamon (www.fao.org/docrep). During 1992 Cinnamon bark oil was being offered at around US$385/kg, largely reflecting the high raw material cost. In 1993 and early 1994 dealers in London were only quoting prices on request. Cinnamon bark oil is a high-value essential oil but the volumes traded are very low. In the ten years since 1983 exports from Sri Lanka, virtually the only supplier of the oil, have never been more than 2.8 tons. The major market is the EU, within which France is the biggest importer. In recent years the United States has emerged as the second largest importing country. September 2002, wholesale prices for cinnamon bark oil is at $28.60/oz. (Source: Essential Oil University-Wholesale prices for September 2002, www.essentialoils.org)

Cinnamon leaf oil has a warm, spicy, but rather harsh odor, lacking the rich body of the bark oil. Its major constituent is eugenol. It is used as a flavoring agent for seasonings and savory snacks. As a cheap fragrance it is added to soaps and insecticides. The oil's high eugenol content also makes it valuable as a source of this chemical for subsequent conversion into iso-eugenol, another flavoring agent.

World demand for cinnamon leaf oil has been around 120-150 tons pa in recent years, met almost entirely by Sri Lanka. The United States and Western Europe are the largest markets for cinnamon leaf oil. Imports into France and the UK have fallen in the last few years, as they have slightly for India. Hong Kong is a significant importer although most of the oil is re-exported. Cinnamon leaf oil, in contrast, has been in the range US$6.50-7.50/kg throughout the mid 1990's. Although it is comparatively a low-priced oil it is still more expensive than clove leaf oil as a source of eugenol. 2002 Wholesale prices of Cinnamon leaf oil range from $3.00/oz to $6.60/oz for organically certified oil (Source: Essential Oil University-Wholesale prices for September 2002, www.essentialoils.org).

Cassia oil, too, has remained fairly level in price over the last few years. In 1999 the US imported over 400,000 Kilograms of Cassia essential oil valued at almost $11 million (27.5$/kilo), in 2000 imports were at 340,000 Kilos at $8.5 million ($25/kilo). Most of the US imports of cassia (also called Chinese cinnamon) are indeed from China. Wholesale prices of cassia leaf oil are $3.00/oz (Source: Essential Oil University-Wholesale prices for September 2002, www.essentialoils.org).

STRENGTHS	WEAKNESSES
• Fills several market channels, spice, medicinal, flavor and fragrance • Strong and steady demand for oil in flavor and spice industry • Value added product- wood for spice and oil (flavor, medicinal) industry, leaves for essential oil industry (fragrance) • In Colombia and suitable for Putumayo region	• Essential oil not widely used in aromatherapy, nor in many skin products due to dermal irritancy. • Oil from this species may be in less demand than C. cassia
OPPORTUNITIES	**THREATS**
• Possibilities in the organic market to add value to essential oil and spice. Madagascar is currently producing certified organic cinnamon oil, and it is commanding double the price of non-organic oil.	• Other low cost producers in market; Sri-Lanka, Madagascar • Strong competition from southeast Asia and China.

Market Channels:
C- essential oil for flavor, fragrance and limited cosmetics industry

Possible Alliances/ Contacts:
Dragoco, Carrubba, IFF, Manheimer, Lebermuth

6. Aromatic Plants

Jim Duke's Top + Tom E's Additional Plants

Abelmoschus moschatus (Ambrette/ Musk Okra)
Pogostemon cablin (Patchouli)
Dipteryx odorata (Tonka Bean)
Vetiveria zizanioides (Vetiver)
Cymbopogon sp. (Lemongrass)
Aloysia triphylla (Lemon Verbena)
Aniba canelilla (Rosewood, Canelo)

Our Additions (see Section 7 for complete analysis)
Eucalyptus globulus (Eucalyptus)

Scientific Name	**Common Name**	**Local & Trad. Uses**	**Our Use**	DS*	FF*	FI*	C*	GR/ GW*	**O***
Abelmoschus moschatus	Ambrette Musk Okra Muskmallow	Cosmetic/Fragrance: • Distilled oil mostly for perfumery • Seed powder used in sachets Medicinal: • antidote for snake bites (internally and externally). • Digestive, stimulant, antispasmotic • Used externally for cramps, poor circulation, joint pain Culinary: Tincture used as flavoring for tobacco and liqueurs • Oil for food flavoring. Other: • Stem bark used as fiber, root mucilage used as paper sizing material	• Essential oil fragrance, cosmetics, and possibly food industry	-	-	-	3	1	2
Pogostemon patchouli (PILL.)	Patchouli	Medicinal: • Anti-inflammatory activity • Wound healing • Treats skin conditions such as dermatitis, eczema, athlete's foot	• Essential oil for fragrance and cosmetic industries	-	-	-	3	2	2.5

		and dandruff. • Chinese, Japanese and Arabs believe it to possess prophylactic properties Aromatherapy: • Arousing quality; lightens moods of apathy, indifference and mental confusion.							
Dipteryx odorata	Tonka Bean, Amburana, Imburana de Cheiro, Tonquin Bean, "Charapilla del murciélago"	Flagrance/Flavor • use in perfurmery as a substitute for vanilla, also a fragrance fixative • are often added to perfumes, soaps and pipe tobaccos. Medicinal: • cardiac, tonic, narcotic • fluid extract has been used for whooping cough, but it paralyses the heart if used in large doses. • snakebite, contusions and rheumatism. • bark decoction as antipyretic baths, • cough pill made by balling up the crushed seed. • anticoagulant, antidyspeptic, antitussive, cardiotonic, diaphoretic, febrifuge, fumigant, narcotic, stimulant and stomachic. Other**:** • fatty substance of beans sold in Holland as Tonquin butter- a natural moth deterrent	• Essential oil for fragrance and cosmetics industry	-	-	-	2	3	2.5
Vetiveria zizanioides	Vetiver, vetivert, *Andropogon muricatus*	Medicinal: • Antiseptic, • Antispasmotic • Treatment for arthritis,	• essential oil for fragrance, aromathera	-	-	-	3	2	2.5

		muscular pains and aches • Used for cuts, oily skin and wound healing Fragrance: • very important ingredient in perfume formulations • aromatherapy; eases nervous tension, insomnia, depression	py industries						
Cymbopogoncitratus)	Lemongrass, West Indian Lemongrass	In flavors, cosmetics and perfumery: • Commonly used in herbal bath blends and hair rinses. Fragrance soaps, lotions etc. • Said to normalize overactive oil glands, dandruff and similar skin problems Medicinal**:** • Athlete's foot, insect repellent, scabies (antimicrobial, antifungal, antipyretic) • muscular aches and pains, (analgesic) • poor circulation, • insufficient milk in breastfeeding mothers, • colitis, indigestion, fevers, infections illness, headaches, Aromatherapy: • nervous exhaustion and other stress related disorders.	• Essential oil for fragrance and cosmetic industries, aromatherapy • Dried herb for tea industry • Dried herb for potpourri or spice industry	-	-	1	3	2	2
Aloysia triphylla	Lemon Verbena, Yerba Luisa	• Leaves and flowers used for anti-spasmotic, antipuretic, sedative and stomachic. • Stimulates skin • potpourris, herb pillows	• essential oil for fragrances • flavoring for beverages and confections • herb for medicinal teas	-	-	1	2	1	2
Aniba canelilla	Rosewood, Bois de Rose,	Medicinal**:** • Arthritis, Catarrh,	• Essential oil for	-	-	-	3	3	3

	Canelo, Casca preciosa, Brazilian rosewood, Palo de rosa	Edema, • Colds, coughs, fever • headaches Cosmetic**:** • Acne, Dermatitis, Infections, Skin wounds • Cellular stimulant/ wound healing • Minimize lines and wrinkles • Soothes skin Aromatherapy: • Calms nerves and relieves anxiety Other: • Wood used for fine French cabinetry. Now primarily used in china for chopsticks.	fragrance and cosmetic industries. • Possible exotic wood market						

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***Scoring:**
1- WEAK POSSIBILITY—we see some serious obstacles and/or little demand for such a product.
2- AVERAGE POSSIBILITY---we see some good strengths and possible avenues for this product in both the market channels, and in overcoming obstacles to production and marketing.
3- EXCELLENT POSSIBILITY—we see this one as a “winner” the strengths and potentials all outweigh the bad, and we may have even located buyers for this already.

6.1 *Abelmoschus moschatus* (*Musk Okra)*

Market Data:
No market data available.

Although there is little marketing information available, through communication with those in the fragrance industry, ambrette seed oil is used quite often and in a wide array of products. Musks are a mainstay in the fragrance industry and just as animal musks have fallen out of favor, synthentic musks are following the same fate due to some allergies and due to the perception that natural is better. This has created and openned opportunities for a plant-derived source such as ambrette seed.

SWOT Analysis:

STRENGTHS • Crop Colombia currently produces. • Produced in the Putumayo region. • Germplasm is easy to find • Natural alternative to animal and synthetic musks. • Essential oil commands a high price- used in fine fragrances • Unique essential oil	WEAKNESSES • Relatively weak US and European market for essential oil • Minor essential oil- not used in large quantities • Used primarily for fine fragrances, no aromatherapy application
OPPORTUNITIES • Certified organically produced product may fill a niche. • Essential oil sources seem to be limited. • Phtotoxicity reports with synthetic ambrette oil; natural oil is non-phototoxic. • Possible opportunity to use root extracts (mucilage) for the cosmetics industry- similar to *Malva sylvestris* extracts.	THREATS • Cultivated extensively in tropical countries • Confusion regarding photosensitivity and ambrette oil, potential threat to usage.

Market Channels:
C- essential oil for fragrance industry, cosmetics, flavoring for food, tobacco and liqueurs.

Possible Alliances/ Contacts:
Fragrance companies- Aveda, IFF, Dragoco, Belmay, Shaw Mudge;

Flavoring companies- Dragoco, IFF, Carrubba

6.2 Pogostemon cablin (*Patchouli)*

Market Data:

The US Department of Agriculture Foreign Agricultural Statistics (FAS) consumption and dollar values for patchouli essential oil goes as follows: US consumption of patchouli oil was valued at $8,315,000 in 2001. A majority of these imports come from Indonesia at 228,912 Kg ($4,638,000) for the year 2000. Far behind is Spain at $45,000 ($2,310,000) and France, both being buyers not producers. Wholesale prices of patchouli oil ranged from 20-50$/kg for the year 2001. Although the patchouli oil import market has fluctuated somewhat, the current demand for patchouli remains fairly steady. This together with the opportunity for a competitive market to Indonesia and Europe and perhaps higher quality material production through organic certification and/or authenticity and quality certification (QA SOPs), make patchouli a strong choice for Putumayo.

SWOT Analysis :

STRENGTHS • Habitat (East & West Indies, Paraguay) most likely compatible with Putumayo • Moderately priced oil. • Steady market demand • Multiple uses: Used extensively in cosmetics and soaps. Used as a flavor ingredient in most major food products (beverages, baked goods, preserves, etc.) • One of most common ingredients in perfume formulation. • Germplasm easy to find	WEAKNESSES • Little known in Colombia • Germplasm may be hard to find • Can be caustic to stills
OPPORTUNITIES • Certified Organic Oil for fragrance, food and aromatherapy use. • Certification of authenticity to deal with widespread adulteration with oils of cubeb and cedar or inferior oils of Assam (from *Microtoena*. *Cymosa)*. • Alternative source to Indonesia opportunity to provide market with alternative source. • Producing a non-Indonesian patchouli of purity and high quality.	THREATS • Indonesia produces >90% of world supply and is also the largest consumer of patchouli. • Adulteration

Market Channels:

C- Essential oil for fragrance, cosmetics, and aromatherapy markets

Possible Alliances/ Contacts:

Aveda, Belmay, Carrubba, Bio-botanica, IFF, Shaw Mudge, Floressence, Fragrance Resources, Manheimer, Smaller essential oil companies as well (Simplers)

6.3 *Dipteryx odorata* (Tonka Bean)

Market Data:

Little market information was available for Tonka bean or coumarin. Several sources for tonka bean extract were found for the fragrance industry however, suppliers for coumarin seemed more abundant. US trade data does not represent data for this minor ingredient. In a executive summary of a technical report prepared in 1998 by the International Tropical Timber Organization (ITTO PROJECT .PD 143/91 VER. 2 (I)) and several other organizations in Brazil report on about the Tonka bean (cumarú) trade and market situations affecting tonka production. The following are excerpts of this report.

The cumarú market has declined significantly in the past two years. It is still used as a fixative in perfumery, from the cumarina, and is also used as an aromatic agent in cigarettes, whiskies and chocolate. Presently its demand is intermittent, or in other words, based on orders: the buyer contacts a middle man in Santarém, who then makes an order with the collector in the forest.

The report goes on to mention current dollar values to tonka beans as a raw material. In the forest, according to collectors, the stock of the product is great, and may be commercialized whenever there is a demand for it. The collector makes between US$0.70 - 1.00 per kilo de cumarú sold (two years ago prices were around the double, US$ 1.50 to US$ 2.00). The wholesaler, situated in Santarém, sells the product to the exporter for US$1.40 to US$ 2.00 per kilo.

A more thorough study of the cumarú market could help understanding how it might be possible to stimulate the demand, possibly by finding market niches for this very specialized natural product. One of the short time specific studies of this Project is related to cumarú processing which could aggregate value to the product in the region, obtaining better market prices and increasing the demand.

http://www.unb.br/iq/labpesq/lateq/projetos_concluidos_itto_relatorio.htm

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Vanilla-like odor of coumarin make it a popular choice for vanilla fragrance substitute. • Used in many cosmetic products including acne preparations, antiseptics, hair dyes.	• Apparent lack of demand at times • Negative perception about coumarins. • Not advisable for aromatherapy • No agronomic information available, generally wild harvested

• Widely used as a fragrance and fixative in soaps, detergents, perfumes and sunscreens • In Colombia already, ok for cultivation in Putumayo.	
OPPORTUNITIES • In country extraction would add value to product. Brazil and Peru currently only sell the raw material • Coumarins no longer considered unhealthy, opportunity for more suppliers. • Cultivated tonka bean could provide larger supplies and greater quality control over wild-harvested plants.	THREATS • Belief that coumarin in tonka beans is harmful; a oral toxin (and falsely reported, dermal toxin). • Demand is unpredictable

<u>Market Channels:</u>
C- essential oil for use in fragrance and cosmetics industry, perhaps also in flavor industry.

<u>Possible Alliances/ Contacts:</u>
Premier Specialties, Body Shop, Aveda, Givaudan, IFF, Belmay, Dragoco,

<u>Retail Products</u>:
Natural moth repellent, natural cough medicine?

6.4 *Vetiveria zizanioides*, Khus Khus (Vetiver)

Market Data:
The US Department of Agriculture Foreign Agricultural Statistics (FAS) consumption and dollar value statistics for vetiver indicate that last year, US imports of vetiver oil were valued at $573,000 ($51.17/kg). In general, Haiti exports the most vetiver oil to the US with close to 8,000Kg of oil (valued at $377,000) in 2000, followed by France with 1,600kg oil for 2000 (valued at $112,724) in 2000 (French-grown vetiver selling for 23$ more per kg than Haiti). Vetiver consumption in the US has maintained a steady rate for the past five years this is also likely to be true for world consumption, due to stable usage in the fragrance industry. Spot price ranges for vetiver oil have been posted at $33/kg oil (Indonesia) to $46/kg oil (Haiti), with the primary brokers/dealers selling the oil at $87/kg oil from France to $77/kg oil from Switzerland.

Good possibilities exist for vetiver as a candidate in Putumayo. There is a steady market for this oil, it is sold at a relatively high price and there appears to still be opportunity for alternative suppliers, of high quality material and especially to fill emerging interest in certified organic oil. As demands for certified organic essential oils increase, vetiver may be a prime candidate for this, as it is used widely in aromatherapy and cosmetics.

SWOT Analysis:

STRENGTHS • Economically & ecologically important (protects against soil erosion) • Widely used in fine perfumery, aromatherapy, and some skin care • Commands fairly high market price	WEAKNESSES • US is a producer (5,000 kg/y for export, US$ 180K in 2001)
OPPORTUNITIES • US Importer (11,400 kg/y, US$ 573K in 2001) • Certified organic vetiver essential oil may fill niche market.	THREATS • Strong competition (France, 60Ton/y, US$69/Kg, US$4M/y), Haiti, India, Indonesia, Brazil, China also produces vetiver, and production likely to increase world-wide in areas where it is adaptable as it is also used to stabilize soils.

Market Channels:
C- essential oil for fragrance and aromatherapy markets

Possible Alliances/ Contacts:

Aveda, Belmay, Carrubba, Bio-botanica, IFF, Shaw Mudge, Floressence, Fragrance Resources, Manheimer, Smaller essential oil companies as well (Simplers, Tisserand)

6.5 *Cymbopogon* sp. (Lemongrass)

Market Data:
The US Department of Agriculture Foreign Agricultural Statistics (FAS) consumption and dollar value statistics for lemongrass oil totaled at $264,000 for Jan-June 2002. This is a small increase from 2001 ($210,000) but overall there is a downward trend of demand for lemongrass oil since 1999, where it peaked at $1,260,000. It is unclear whether this trend will continue. Prices for lemongrass oil have stayed fairly consistent 16-20$/kg and this price is similar for lemongrass worldwide. Central America (Guatemala) is the largest exporter of lemongrass oil followed by South Asia, the US and European Union. Lowest priced lemongrass oil has been reported at $9.82/kg oil (Brazil), $18.52/kg oil (Guatemala). Highest prices are listed for the broker/dealers in Europe from above $29/kg oil from France and $15/kg from the UK, recognizing the the non-producing countries such as France and the UK reflect prices of dealers and traders prior to exporting to the US.

Although the oil does not command a high price, value can be added by producing certified organic lemongrass may for the tea, fragrance and cosmetics industries. Perhaps this would be relatively easy to do since lemongrass oil has reported insect repellent activities. As such this product makes an excellent low cost dried tea. There are two types of lemongrass: East Indian and West Indian lemongrass. Both differ in the aroma and chemical profile of the essential oils.

SWOT Analysis:

STRENGTHS • Commonly used oil used in fragrance and cosmetics industry • Used in beverage industry- teas • Popular spice in Asian cooking • Easy to grow and harvest • Easy processing method	WEAKNESSES • Fairly inexpensive oil • Minor status for medicinal use • Minor status for use in aromatherapy
OPPORTUNITIES • Certified organic lemongrass and lemongrass oil would be marketable- may be easy to produce this way. • Use for natural insect repellents	THREATS • Many established producers all over the world; India, Haiti, Guatemala,W.Africa, S. America, Malaysia etc. • World consumption has drastically decreased in recent years

Market Channels:

FI- whole herb use in teas, spice

C- essential oil for fragrance, cosmetic industries and some aromatherapy

Possible Alliances/ Contacts:
Celestial Seasonings, MOP (Modern Organic Products), Dragoco, Aveda, Belmay, Carrubba, Bio-botanica, IFF, Shaw Mudge, Floressence, Fragrance Resources, Manheimer, Smaller essential oil companies as well (Simplers, Tisserand)

6.6 Aloysia triphylla (*Lemon Verbena)*

Market Data:
No market data available.

One benefit of lemon verbena is that it has crossover into several industries- fragrance/cosmetic, flavor and beverage. However, due to limited market information for lemon verbena in any of these industries, there is little factual data to prove its potential.

Lemon verbena oil is a minor fragrance oil, this may indicate that the oil is not in high demand for the fragrance/flavors and cosmetics industry and/or the supply (and price) limits its use. Because this oil is commonly 'mimicked' by a mixture of lemongrass oil and others, there could possibly be an opportunity for real lemon verbena oil, alternatively, there may be few buyers willing to pay the higher price for the authentic product. We did not find many market opportunities for international trade in this plant and aromatic oil, despite the high interest by those in Colombia.

SWOT Analysis :

STRENGTHS • Native to Chile and Peru, growing conditions are right for Putumayo • Used by both flavor & fragrance industry • Easy cultivation & harvesting • Fills a niche for specialty, unique citrus fragrance notes	WEAKNESSES • Limited general culinary use • Limited markets
OPPORTUNITIES • True verbena oil is hard to find; (Most of the so-called verbena oil is from the Spanish verbena (inferior oil) or a mixture of lemongrass, lemon, citronella). • Certified organic oil may possibly have a market	THREATS • Less expensive so called 'verbena' oil actually a combination of lemongrass and other oils.

Market Channels:
FI- herb used in medicinal teas, (calming, sedative, anti-spasmotic)

C- essential oil for fragrance and flavoring industries

Possible Alliances/ Contacts:
IFF, Dragoco, Premier Specialties, Aveda, Belmay, Givaudan

6.7 *Aniba canelilla* (Canelo/ Rosewood)

Market Data:
Background: Although formerly used widely in fragrances and in soaps, rosewood oil usage has dropped dramatically. Rich in linalool, a chemical which can be transformed into a number of derivatives of value to the flavor and fragrance industries, rosewood was the main source of natural linalool. This usage largely disappeared upon the creation of synthetic linalool in the 60's. In addition, for applications where natural linalool is required, rosewood has been displaced by the much cheaper alternative (Chinese Ho oils from *Cinnamomum camphora*). However, there does seem to be a small niche market for natural linalool oil derived from rosewood as well as pure rosewood oil for use in aromatherapy. There is also some confusion about this plant as more than one plant in Colombia is called Canelo or Rosewood.

In a 1996 report prepared by the FAO rosewood oil was reviewed for its market opportunities. Below is information gathered from this report. (Flavors and Fragrances of Plant Origin, FAO)

In the 1960s, exports of rosewood oil from Brazil alone were around 500 tons pa. Today, the world market for rosewood oil is about 100 tons pa, the decline in use arising largely from its displacement by synthetic linalool. Demand is reported to be stable, those who moved away from using rosewood oil in their formulations having done so many years ago. However, any marked and prolonged upward move in the price of the oil above recent levels could adversely affect demand. Some of the top-of-the-market perfumery houses have expressed concern over the destructive manner of producing rosewood oil and a transition to sustainable production would be welcomed by such users.

The United States is the principal importer, followed by Switzerland, France and a number of other EC countries. Regional demand is very small and in 1990 was limited to Argentina (0.4 tons).

In more recent statistics. FOB prices for Brazilian rosewood oil have been in the range US$18-32/kg over the period 1987-93. Prices in late 1993 were about US$23/kg; they are expected to rise slightly in 1994 as a result of temporary shortfalls in wood supplies (arising from low river levels). (David Cookson & Co., Inc. www.cooksonco.com)

Information from the U.S. Department of Commerce publication showed the import quantity of rosewood oil to be at 28 mt in 2000.

Supply sources

Brazil is the only supplier to the world market. However, as the costs of collecting from a limited resource increase, and government regulations become tighter in Brazil regarding its collection, there will likely be a decline in rosewood oil production. This is a cllear opportunity for Putumayo.

Attempts at cultivation of Aniba to date have not been successful but the lack of any direct alternatives to rosewood oil in established, top-of-the-range perfumery formulations makes it desirable to pursue this objectives.

Currently, Rosewood oil has a place in the high-end ingredient roster for top-of-the-line perfumes, and that niche demand is predicted to stay steady. However, as we have seen in the past and will in the future, it is profit margins and ease of procurement that influence purchasing and ingredient choices for future creations. This is an opportunity for growers in Putumayo if these issues can be resolved, however it will have its challenges.

SWOT Analysis :

STRENGTHS • Expensive oil used in fine perfumery. • Demand could potentially be strong • Native plant of the Amazonian rainforest; Appropriate for Putumayo region • Multiple uses: essential oil, medicinal, food and beverage categories, wood	WEAKNESSES • Limited agronomic information available • Input of research time and money to develop proper cultivation methods for success in Putumayo • Perceived as too expensive and hard to obtain • Current demand is weak due to synthetic usage. • diversity and a narrowing of the genetic base on which future domestication of the species will depend.
OPPORTUNITIES • Alternative source to Brazil • Potentially huge demand for material NOT	THREATS • Industry has moved toward synthetic linalool as rosewood replacement due to

harvested from rainforest. Produced sustainably. • Market opportunity- Amazonia is primary producer and Brazil has put limitations on its own harvest. • May be a good project to team up with a Colombian University for agronomic research. • Extraction done in Colombia for added value	decreased supply and prohibitively high costs. Synthetic linalool has become the industry standard.

<u>Market Channels:</u>

C- essential oil for fragrance, cosmetics and aromatherapy industries

GR/GW- sustainably produced rosewood

<u>Possible Alliances/ Contacts</u>:

Aveda, Premier Specialties, Givadaun, IFF, Dragoco, Belmay, Shaw Mudge, Several high quality essential oil companies (aromatherapy grade).

7. Our Additions

7.1 *Ptychopetalum olacoides* (Marapuama or Muirapuama)

<u>Market Data:</u>
No market data is available for this product

<u>SWOT Analysis:</u>

STRENGTHS	WEAKNESSES
• Popular herb for use in male potency formulas. • A true Amazonian herb.	• Very little data to support its use. • No current cultivation on cultivation available, techniques may be difficult. • Few studies on this plant and standardization method is not available for it. • Smaller market compared with popular ones such as *Epimedium*, *Tríbulus* and *Maca*.
OPPORTUNITIES	**THREATS**
• Since nobody is yet cultivating this species and there is a demand (forecasting the demand may be difficult), there should be some alliance opportunities with extractors and manufacturers in the dietary supplement side. • Clinical development supporting its performance and anti-depressive potential.	• Less scrupulous manufacturers using cheap and/or adulterated products making outlandish claims for efficacy could ruin the industry.

<u>Market Channels:</u>
DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

<u>Possible Leads:</u>
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Beverage / Tea Companies

Possibly some Pharmaceutical Companies

7.2 *Passiflora incarnata, P. edulis and P. alata* (Passionflower, passion fruit, marcuja)

Market Data:

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Broadly used around the world as a safe and effective sedative. • The fruit is considered GRAS for food applications in the U.S.; the leaf is allowed as a dietary supplement by DSHEA • Cultivation techniques well known. • Ideal potential for organic certification. • Numerous applications in several industries. • Could be grown within a crop cluster, using its vine-like growth to climb up and use the support of other trees.	• Price/value may not be high enough to justify commercial development.
OPPORTUNITIES	**THREATS**
• Contract growing opportunities for several types of customers. • Clinical development opportunities. • Unique opportunity in world market to substitute Kava Kava consumption with safer more effective products. • Could fit well into a crop cluster	• *Passiflora* species are susceptible to a variety of blights and diseases.

Market Channels:
DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

FF- fruit allowed in foods, as a functional food ingredient

FI- as a functional food ingredient and flavor

C- cosmetics as a fruit acid, fragrance, exotic ingredient.

Possible Alliances/Contacts:
Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Beverage / Tea Companies

Cosmetic Manufacturers—Aveda, Zia?

7.3 *Spilanthes oleracea*-(or Acmella or Jambu)

<u>Market Data:</u>

Very little data possible

<u>SWOT Analysis:</u>

STRENGTHS	WEAKNESSES
• Broad variety of use as food (salad, vegetable), spice (as a kind of pesto sauce), and medicinal plant. • True Amazon plant, traded and used quite commonly in places like Belem, Para (Brazil).	• No status in the US and the world. • Very few studies. • No standard for spilanthol commercially available, would need to be isolated and purified at ca. \$3-6,000.
OPPORTUNITIES	**THREATS**
• Contains spilanthol that numbs the tongue. Many potential development opportunities. • Standardization method will be easy to developed based on spilanthol type compounds. • Contract growing potential. • Joint research and development potential.	• Unknown trade potential other than local consumption in Brazil.

<u>Market Channels:</u>

DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

FF- fruit allowed in foods, as a functional food ingredient

FI- as a functional food ingredient and flavor

C- cosmetics as a fruit acid, fragrance, exotic ingredient.

<u>Possible Alliances/Contacts:</u>

Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Beverage / Tea Companies

Cosmetic Manufacturers—Aveda, Zia?

7.4 *Lippia sidoides*- (Alecrim or Alecrim-pimenta in Brazil)

Market Data:

Very little data possible

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Easy to cultivate. • High content of essential oils. Good source for thymol and carvacrol • Interesting chemical profile of the oil. • Many potential applications in food and medicine. • Some good development work done in Brazil. • High phenols of interest for antimicrobials and wound healing in humans and animals. Industry searching for new plant sources of thymol and carvacrol.	• No status in the US and the world; not on GRAS list • Very few studies. • Not fully chemically characterized.
OPPORTUNITIES	**THREATS**
• Development of clinical data and marketing partnerships. • Contract growing potential. • Production for high phenols.	• Unknown trade potential other than local applications currently.

Market Channels:

DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

FF- fruit allowed in foods, as a functional food ingredient

FI- as a functional food ingredient and flavor

C- cosmetics as a fruit acid, fragrance, exotic ingredient.

Possible Alliances/Contacts:

Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Beverage / Tea Companies

7.5 *Euterpe oleracea*- (Acai- fruit and wood for hearts of palm)

Market Data:
This data is excerpted and adapted from :
http://www.unb.br/iq/labpesq/lateq/projetos_concluidos_itto_relatorio.htm

This is the generating matrix of two non-wood products: palm heart and açai fruit or berries.The first, is done by cutting the palm or its trunk, and the second by collecting the clusters of fruit (See below the table about the economic system of the açaizeiro) In a certain sense, the exploitation of the palm heart and the açai are mutually exclusive. If one extracts the palm heart, the potential for exploiting the fruit is reduced. The collector must make an economic choice, and generally the choice is made by short term necessities, such as the survival of the family. Below are listed economic, social and environmental conditioning factors which characterize tradeoffs between the collection of the fruit and the extraction of the palm heart.

Palm heart may be collected all year long. The fruit may only be collected during the fruiting season between June and September. This factor pressures the collector to extract the palm heart, as alternative income outside the season for the fruit (Oct. to May).

Once the palm heart has been extracted, that palm will not bear fruit during a period of from four to six years, reducing the offer of the product and creating scarcity of self consumption for the family. Independently of being commercialized or not, the açai fruit may be consumed by the family, so it is more plausible to conserve the palm. The juice is very popular and consumed often during the season and out of it, if kept frozen. Following information from the region, a family of ten persons may consumes up to 14 kg of fruit daily, which contributes a great deal to the nutrition of the family, particularly of the children, because of its high energy value. By the sale of palm heart, the collector reduces the production of the fruit and engenders a reduction in family consumption of the juice, so the excess of fruit may be commercialized to supply income to meet the other demands of the family (rice, flour, sugar, salt, oil, clothing, fuel, etc.) principally during the period between the seasons of the fruit collection.

Palm Heart

Palm heart is the third most important non-wood product of the Northern Region of Brazil, at present accounting for 13.8% of the sector. In 1995, the total production was 19,298 tons worth US$ 8.9 million. At the moment, the production concentration spreads from Gurupá to the Marajó island area.

Palm heart is extracted by the riverine populations and sold to the canning companies who are installed nearby the areas of extraction. Its commercialization is based on extraction, industrialization, and distribution (domestic and exportation).

Its extraction is done by the families who live in the estuaries of Amazonia – lowland river floodplains as well as dry higher lands. To do the extraction, the collector needs to travel on the average for four hours round trip (Pollack, 1992). There, he or she extracts on the average 200 small palm hearts (diameter < 2cm) or 175 medium (diameter = 2-3cm) or 150 large (diameter > 3cm) (Pollack, 1992)

If the extractivist sells the stalk to the processing plant, he can receive US$0,039 for a small palm heart, US$0,052 for a medium one and US$0,065 for the large one. If the extractivist has already sold the prepared palm heart to the company, he may receive between US$1.00 and US$1.30 per kilo. The company then only has to package and label the product. After processed and packaged, the palm heart production is bought by the trader who distributes it to the domestic market and exports it. A company processes on the average 30 tons of palm heart per month at a gross average income of US$10,700 per month with a profit of US$ 3,300.

Acai Fruit

In recent years the açai fruit has gained in economic importance in the entire Amazon estuary. It has been for centuries a source of alimentation for the local population and has a wide regional market. It is estimated that 59% of the commerce of açai is regional, it is concentrated to the Amazon River estuary (Lameira, 1997). Also, the extractivist families reserve between 1/3 and 1/5 of the total product collected for their own consumption. Following data from field research, a family of 10 may consumes up to an old dry measure (rasa) of açai per day which is the equivalent of 20 liters or 14 kg. Depending on the size of the crop and local urban demand, the price of the rasa may vary in a great interval from US$ 2 to 17. Also, in Belém, the demand for açai reachs 4 tons per day.

With the crisis of the palm heart due to the more rigorous fiscal pressure on the part of IBAMA, there is a tendency to increase production of açai fruit, whether because of the demand for local consumption, which lately has been suppressed as a form of generating a commercializable excess or whether it is because of the growing demand of the market for açai pulp.

In the Santarém region, specifically in the city of Santarém, açai fruit has been commercialized on the average for US$ 3.50 per rasa.

Açai juice is also an important product which may be used to generate income and increase its value by the introduction and diffusion of new technologies for the preparation of the pulp, ice cream, jellies, etc. The regional market of Amazonia could already constitute the object for açai expansion.

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Rich tradition of use as food and tonic. • Interesting potential development of agriculture and marketing resources. • As a fruit, no GRAS petition should be necessary.	• Taste is somewhat difficult to appreciate for many.
OPPORTUNITIES	**THREATS**
• Interest seems to be mounting for use as a new flavor • Development of several products. • Contract growing, possibly organically. • Development of products for local as well as export consumption.	• Improper harvesting techniques can threaten the species.

Market Channels:

DS- Dietary Supplement as raw or processed or extracts (simple or standardized)

FF- fruit allowed in foods, as a functional food ingredient

FI- as a functional food ingredient and flavor

C- cosmetics as a fruit acid, fragrance, exotic ingredient.

Possible Alliances/Contacts:

Herb Traders – RFI, BI Nutraceuticals, Schwabe Group, and many others

Extractors – Centroflora, Euromed, and others

Dietary Supplement Companies – Metabolife, GNC/Nutricia, Weider, and many others

Beverage / Tea Companies

Cosmetic Manufacturers—Aveda, Zia?

8. Market Assessment by Market Channels

8.1 Dietary Supplement Ingredients

Definition and Regulatory Bodies that affect this segment

US- In the United States, dietary supplements or "herbs" are governed and defined by the Dietary Supplement Health and Education Act of 1994 (DSHEA).

Overall Size and Growth of Supplement Industry

Natural product sales in the year 2002 have topped $34 Billion. In the 1990's in the U.S. many segments of the natural products industry were growing at double-digit figures, sometimes as much as 30%. The market in the U.S. has matured, and many companies have been feeling the crunch, but the retail market still remains a solid growth market at 8.3% for 2001. This is excellent when compared to the performance of the top 10 supermarket chains in the second half of 2001, as it was almost flat in growth at only 0.1%. The growth of natural and organic product sales in the food/drug/mass merchandisers increased 5.5%, and for all the natural and organic product sales in retail and non-retail outlets increased 6.7%

Various Supplement Categories

Supplement Sales (top growth areas for 2001)

Sports Supplements- 13.7%

Specialty Supplements (include. Ayervedic, hormones, essential fatty acids) – 12.5%

8.1.1 Powdered / minimally processed

STRENGTHS • Very little investment in machinery • Little investment in technology transfer • First level of value added chain, and if this can be done well, then usually able to build other market channels on this success for certain products	WEAKNESSES • Low on value added chain; fetches low price • No possibility for distinction unless raw material is somehow higher quality (organics, certain cultivars, etc.) • Hard to sell into major markets, because most people wand extracts or further processed products; have to sell mostly to distributors
OPPORTUNITIES • Possibility to adapt local technologies (coca production, etc.) to processing raw material • Possibility to procure higher price through organic cultivation of other distinction of quality (certain cultivars)	THREATS • Minimally processed herbs are becoming 'commodified' for several herbs

List of Potentials

Cat's Claw, annual wormwood,Guarana and Guayusa (yerba mate), Sangre de Drago, Pau d'Arco, Chanca piedra, local added species in medicinal area, Cinnamon, Tamarindus, lemon grass, lemon verbena (local markets), ginger, turmeric, passionflower, marapuama, Jambu?

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

Exalted Extracts- ginger and turmeric (organic only)

Centroflora/RFI?

Pharmanex?

8.1.2 Simple extracts

STRENGTHS	WEAKNESSES
• A way to add value with little investment • A step further, and higher price, on value chain	• Not highly value added, and usually fetches not very high price
OPPORTUNITIES • For newer herbs to market (like many S. American species are), simple extracts are preferable because no standard had yet been created. • Good way to begin a market with a new herb • Companies can build upon these products once they see success and buy story by creating their own standards	THREATS • It's hard to control quality. • Much competition on herbs known in market, no way to compete with herbs that have standards established • methanolic extracts not allowed in foods in U.S.

List of Potentials

Cat's Claw, wormwood?, Guarana, Chanca piedra, Bitter Melon, marapuama, local species (medicinal), Annatto?, Passionflower?, Tamarind ?, Jambu?

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

Pharmanex?- for local species

8.1.3 Standardized extracts

STRENGTHS	WEAKNESSES
• Mature value added markets exist for many herbs in both foods and supplements	• High investment in technology with little return • Difficult to standardize products especially for these with no active components have been reported
OPPORTUNITIES • Opportunity for local companies to develop their own standards (maybe even patentable by process) for new herbs and create proprietary products • Possibility to sell to manufacturers on contractual agreement that have established demands	THREATS • Much competition for established herbs • No standards exist for newer local herbs

List of Potentials

Cat's Claw, guarana, pau d'arco, jaborandi, indian coleus, bitter melon, guayusa, ginger, turmeric, stevia, passionflower

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

Pharmanex?

RFI/BI?

8.2 GRAS ingredients

STRENGTHS	WEAKNESSES
• The functional food industry is the hottest in the U.S. natural products segments, anything that is GRAS can be put into foods, and supplements • Most likely this is a trend that is here to stay • If a botanical is clearly a food, then it does not need to be listed by The Herbs of Commerce, as it is considered food, and allowed in foods and supplements.	• May be perceived by consumers as being too much like food and not have an effect
OPPORTUNITIES • Consumer perception of safety! • Products that are GRAS can fit into many market channels, and product types. • Many of the GRAS ingredients tend to fit into the hottest product categories of energy and weightloss	THREATS • GRAS ingredients in the U.S. tend to be standardized poorly, and be of low quality and efficacy—this may hurt long term market • Long term market is unknown, may be just a fad • Perception of Colombian product being sprayed

List of Potentials

Guarana, ginger, turmeric, passionfruit, bitter melon

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

8.3 Functional Food Ingredients

Definition and Regulatory Bodies that affect this segment

US- In the U.S. "Functional Foods" do not fit into a legally defined separate area, and are therefore regulated as foods. This means they must be GRAS, or have a very strong traditional food/beverage use.

Organic Foods (top growth areas for 2001)
Food service- 37%
Nutrition Bars- 35%
Snack Foods- 29%
Nondairy Beverages- 26%
Packaged Grocery- 23%

8.3.1 powdered/dry extracts

STRENGTHS • The functional food industry is the hottest in the U.S. natural products segments, anything that is GRAS can be put into foods, and supplements • Powdered herbs take low investment • Preferable for use in solid food items, such as bars	WEAKNESSES • Dry extracts take a higher investment • The hottest functional food categories tend to be requiring water soluble extracts and the formulation require certain techniques.
OPPORTUNITIES • Some of the food markets are growing (bars), and new GRAS Functional foods may be high in demand	THREATS • Perception of Colombian product being sprayed—the food market is stricter on purity than supplements so far.

List of Potentials

Guarana, ginger, turmeric, bitter melon, Annatto?, Guayusa?, Cinnamon?, Lemon Grass?, Acai , passionfruit, jambu

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

RFI/BI?

Centroflora?

8.3.2 liquid extracts

STRENGTHS	WEAKNESSES
• The functional food industry is the hottest in the U.S. natural products segments, anything that is GRAS can be put into foods, and supplements	• May be perceived by consumers as being too much like food and not have an effect • Many of the biggest companies are extremely conservative about new product development, and take a really long time to develop new products with new ingredients
OPPORTUNITIES • This is the functional food area where more risk is taken on new ingredients • Few of the products are highly standardized, so lower input technology may be fine	THREATS • Perception of Colombian product being sprayed—purity is a big issue • GRAS ingredients in the U.S. tend to be standardized poorly, and be of low quality and efficacy—this may hurt long term market • Food companies want to see a lot of science on botanicals, unless they are known to be containing known ingredients (like caffeine)

List of Potentials

Guarana, ginger, turmeric, jambu, passionfruit?

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

RFI?

8.4 GRAS Food Ingredients

Definition and Regulatory Bodies that affect this segment

In the U.S. these products must be considered GRAS, or have a long history of traditional food use.

8.4.1 Spices

STRENGTHS	WEAKNESSES
• Well known stable long-term markets	• Most spices tend to be commodities

• Well known cultivation and usually easy germplasm to obtain	have much competition and price fluxuations • Difficult to break into trade channels
OPPORTUNITIES • Organic cultivation may add value and distinction to Colombian spices • May be able to differentiate by adding story, and also entering into several different market channels (thus adding value)	THREATS • Strong competition world-wide

List of Potentials

Cinnamon, ginger, turmeric, cinnamon, roselle?, lemon grass, lemon verbena?

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

8.4.2 Exalted Extracts

Fruits/Fibers/Gums

STRENGTHS • Strong commodity markets	WEAKNESSES • Very difficult to break into markets • Requires product development
OPPORTUNITIES • Sometimes opportunities for new fruits, fibers, or gums to break into the markets exist • Maybe opportunity to put a “grass roots” level marketing story on either an ingredient (nuts, fibers) or retail product (packages of nuts)	THREATS • Hard to get consumers to eat new fruits • Need to have GRAS status for new food additives for fibers and gums • Once a market exists, much competition ensues, and product becomes commodity

List of Potentials

Acai, Bitter Melon?, Tamarind?

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

RFI?

8.4.3 Nat. Preservatives? (Antioxidants/Antimicrobials)

STRENGTHS • Huge volumes once market exist • Large up and coming market	WEAKNESSES • Flavor and odor must be kept at minimum

	• Absolutely must be considered GRAS
OPPORTUNITIES • The technology is not that difficult, may be a good program for collaboration with Colombian University • Many spices have antimicrobial agents in them already • Many botanicals have antioxidants that may serve as preservatives • Opportunity to be a leader in a relatively new market	THREATS • Very difficult to do challenge studies for foods correctly • High antiseptic qualities yet must cause minimal irritation on skin.

List of Potentials

Ginger, Turmeric, Lippia sidoides

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

Many companies would be interested in the final product. Aveda may be interested in the developments.

8.4.4 GRAS Nat. Extracts that impart Color?

STRENGTHS • Large volumes and steady markets • Expanding up and coming market	WEAKNESSES • Some product development is required; investment required • Color character and permanency- natural colors tend to be inferior to synthetic pigments.
OPPORTUNITIES • The technology is not that difficult, may be a good program for collaboration with Colombian University • Huge opportunity exists for development of natural blues and greens! • Plants that are considered GRAS or strong food use can be used for natural colors in foods, but just not labeled “natural colors”	THREATS • The correct development needs to happen in order to produce extracts that are suitable for foods • Stricter regulation comparing with dietary supplements

List of Potentials

Annatto, turmeric, Acai? Roselle?

List of possible partnership leads - New Technologies (these are to be added to and developed in the second contract)

RFI

8.5 Cosmetics

Definition and Regulatory Bodies that affect this segment

The definition of cosmetic under the law varies slightly between countries, but in general terms "cosmetic" means any article intended to be used by means of rubbing, sprinkling or by similar application to the human body for cleaning, beautifying, and for maintaining health of the skin and hair, provided that the action of the article on the human body is mild. The regulatory agency for cosmetics in the US is the Food and Drug Administration (FDA). The FDA does not require pre-market approval for cosmetics. The cosmetic product name and details of its ingredients are voluntarily reported to the FDA within 60 days of marketing. With the exception of color ingredients that require authorization for use, the FDA does not approve the use of any cosmetic ingredient, unless a safety problem arises after it has been put on the market, in which case the FDA can take action. The FDA's budget for cosmetic safety surveillance is less than 1%.

Esseential oils (EOs) are the volatile, odorous oils that occur in certain plants. EOs are widely known for their scents and flavors, making the food flavor and fragrance (F&F) and aromatherapy industries among the biggest users.

Essential Oils/Cosmetics/Fragrance Categories

Natural Personal Care (top growth areas)

Personal Care (include aromatherapy)- 22%

Organic Personal Care- 42%

Housewares-22%

Organic Housewares-66%

8.6 Fragrances

Size/growth/barriers/strategy/SWOPT

There is little information on the size of the markets for the specialized essential oils (Eos) and plant extractswhich are mainly inputs into F&F and aromatherapy products. Therefore, trends in the F&F markets are the best indicators of trends in the EOs markets.

WORLD TRADE IN ESSENTIAL OILS (in millions of US$)					
	1986	1990	1994	1998	Avg. annual rate of sales
Exports	2149	4122	5051	7435	10.9
Imports	2008	4206	4802	6811	10.7

Source: UN International Trade Yearbook 1999 and 1992

According to Leffingwell & Associates, the estimated 1999 Total World F&F Sales is US $11.0 Billion and the estimated sales growth for 2000, in local currencies, was about 3-4%. Over the last 20 years, the total market for F&F has been expanding at an average annual sales rate increase of 5.7%. There are over 800 F&F companies worldwide and of these, the top 10 shared an estimated 75.6% of the world market in 2001. The US, Western Europe and Japan together account for 78% of total F&F product consumption. The US is the largest producer and user of F&F products. France is the largest producer and exporter of upscale fragrance materials. (*www.leffingwell.com/top_10.htm* and *www.rirdc.gov.au/pub/*).

The major exporters of EOs are the US, Europe and a number of developing countries like India, China, Brazil, Madagascar and Indonesia and Singapore. World demand for EOs grew at an average rate of 6.1% between 1993 and 1998. Although this increase in demand was largely driven by the needs of the F&F industry, it does not just reflect growth in the output of this industry. Changing consumer preferences in favor of natural over synthetic substances has translated into a growing demand for EOs and other plant extracts. A feature of the EOs market is that the markets for each product are discrete; i.e., each EO has its own demand drivers, customer groups, cost conditions, uses and price. Therefore, demand is typically very oil/plant-specific.

STRENGTHS	WEAKNESSES
• Giant industry with extremely diverse	• Market demand for oils can be subject

applications. • Strong and stable industry • Demand for certain oils will always be there • Higher value for unique flavor and purified flavor compounds • Creativity rules	to strong fluctuations. Trends can play a major role on fragrance popularity. • Essential oil variability due to climactic conditions- character can totally change= added risk. • Higher costs for organic certification • Potential difficulty entering into established market
OPPORTUNITIES • Production of rainforest EO plants,such as rosewood, to prevent wild harvesting and rainforest depletion • Aroma chemical discovery using GCMS technology 'artificial nose' of exotic flora. • Big opportunity exists for certified organic essential oils especially for use in aromatherapy, also for cosmetics and fragrances. • Old extraction techniques are of interest: a return to the original or pure scents- without chemical residue (this also feeds into the organic demand). • New extraction techniques that produce the purest representation of the EO such as CO2 extraction.	THREATS • Competition by lower cost producers with long tradition of EO production. India, Southeastern Asia, etc. • Organic certification is not trusted or respected.

List of Top Picks

Ambrette seed, Rosewood (Canelo), Patchouli, vetiver, lemongrass, orchid, new extracts (fern leaf for instance)

List of possible partnership leads and New Technologies

Aveda, Carrubba, Inc., Premier Specialities, Aubrey Organics, Certified Organic EO are of great interest- explore extraction methods. New essential oil plants are also of great interest. Rosewood oil from cultivated source, great story companies such as Aveda or others would like to pick up.

8.7 Cosmetic Ingredients

Size/growth/barriers/strategy/SWOPT

There is no specific information on the size of the markets/growth for natural ingredients for cosmetics. However, as inputs into F&F and aromatherapy products, trends in the F&F markets are the best indicators of trends in the ingredients market (see above). It is also important to note that botanical extracts for the cosmetics industry also fall under the herbal extracts category.

STRENGTHS	WEAKNESSES
• Extracts for the cosmetics industry is rapidly growing U.S. natural product segment. Extracts are not evaluated by the FDA unless there is a safety issue that arises. • Fast-growing industry. Always searching for the next best herb to sell.	• Many cosmetic formulations have herbs only for label claims some consumers feel cheated when it doesn't work. • Market demand for extracts can be subject to strong fluctuations. Trends can play a major role on fragrance popularity. • More requirements for materials than dietary supplements. • The volume is smaller than the dietary supplement industry.
OPPORTUNITIES	THREATS
• Standardized extracts are of great interest for functional effects. • The following functions are highest in demand: anti-aging; anti-wrinkle, anti-oxidant, skin conditioning, sun protection, stimulation of hair growth. • Predictabilitiy: Cosmetic extract trends follow the functional food and herbal drug/ extract trends. • The margins are higher than the dietary supplement industry	• Costly to do efficacy testing that is starting to be industry standard for many companies.

List of Top Picks
Comfrey Root (*Symphytum officinale*), Nettle Leaf (*Urtica dioica*), Passion Flower (*Passiflora incarnata*), tamarin, Green tea and grape seed.

List of possible partnership leads and New Technologies
Aveda, Carrubba Inc, Certified Organic ingredients

Pharma Partnerships
Bioprospecting/benefit sharing relationships

Annual global sales for pharmaceuticals is currently about US$300 billion a year, with the US being the largest market, and then Japan, and the European countries. A few multinational companies source their own field collections from plant origin, but most will create relationships with "intermediaries". The intermediaries may be botanical gardens and universities, partners with source countries, and commercial brokers. Of these companies a few are allied with source country institutions for the sourcing of materials, with the best known being Merck's arrangement with INBio in Costa Rica. Monsanto, American Home Products, and Bristol-Myers Squibb are also in such arrangements.

If Colombian institutions were able to pool resources to prove they have capability of taxonomic characterization, field collection, and the ability to form a solid benefit-sharing relationship, perhaps pharmaceutical relationships for the development of pharmaceuticals could be forged. Given the expertise and scientific strength of CAB, this could be pursued. Benefit-sharing relationships are growing, and many developing countries around the world are beginning to have these sorts of relationships. No longer is it acceptable for pharmaceutical companies to just pay for samples. They are now starting to provide other benefits to source countries, including: salaries for researchers in the source country, funding of laboratory modifications/maintenance; funding of computer systems; provision of funding of laboratory equipment and consumables; provision of field work; communication and shipping costs; scientific training; and access to scientific literature.

Two major issues that are barriers to this "market channel" would be the instability of the political and socio-economic status of Colombia, and the spraying of defoliant on forest species leading to contamination of products. An excellent resource that outlines these markets is: The Commercial Use of Biodiversity[6].

8.8 Grassroots level / Native Marketing Retail Strategy

2-3 species (ie teas, incense)

General Strategy and Theory for this Channel

The market strategy in this model is to diversify and give higher value product ownership to rural farmers for certain products that can be produced as retail products. These products will have the advantage having a socially conscious marketing story that will help in their sales. For example, a tea from "Colombian Mate", which provides all or part of the proceeds to a particular village or indigenous group (stated on the label), for an alternative to illicit crop production.

List candidates/Partnerships

- Tea- "Colombian Mate"
- Incense- Ambrette (or a type of Copal)

- "New Age Tatoo"- Annatto and/or Sangre de Drago
- Traveler's Diarrhea and/or Botanical Band-aid- Sangre de Drago

8.8 Grassroots level / Native Marketing Ingredient Strategy

2-3 species (ie colors, fragrances for cosmetics, incense)

General Strategy and Theory for this Channel

The strategy is similar for this channel as the retail channel, but instead of a retail product, this channel is focused at producing an ingredient, or bulk product for sale to other distributors/traders.

List candidates/Partnerships

- Hearts of Palm- Acai
- Botanicals- any of the local added species

8.9 A Note on the Organic Markets

There is an increasing trend in the purchase and consumptions of organic natural plant products. This section will be expanded in the next Market phase, but we include it here purposefully for recognition of the market push for certified organic products. Organic Markets are growing wildly in the United States in many areas of the Natural Products markets. Many of the companies we contacted asked whether the products were, or could be organically obtained. According to one Natural Product Magazine: [7]

"People are aspiring to an organic lifestyle. That trend is driving deeper down our socioeconomic scale so not just highly educated, higher-income people are interested in buying these products, but more middle-class and lower-middle-class [consumers] are aspiring to an organic lifestyle represented by these products," Jacobowitz says. "It's hard to overstate the implications of that trend for the growth of our industry."

8.10 A Note on "Living Pharmacies"

Though slightly outside the marketing concept we present here, it may be of interest to consider adding some attention to the concept of "Living Pharmacies" to the project. Living Pharmacies are the development child of a Brazilian professor, Francisco José de Abreu Matos. The concept of a Living Pharmacy is quite simple: to foster the development of natural, local remedies to treat a variety of illnesses in remote areas, where allopathic medicine may not be commonly available. A Living Pharmacy project usually consists of a trained Agronomist, who plants and cares for a garden of medicinal plants, and a Pharmacist, who prepares and dispenses crude drugs from this garden. The plants selected are pre-screened for safety and efficacy and treatment rationale. The crude drugs are prepared locally using simple extraction and tincturing techniques. One may include and incorporate local healing practices within a Living Pharmacy to ensure the highest possible population compliance. Additionally, once a community is formed, it can provide a basis for technology transfer, and a growing “cooperative” for producing other commercial crops. Our project, if it moves forward will be employing most of these required principles, so it is a model that is worth exploring.

The results are staggering, with a handful of local plants and some simple products many treatable diseases are being significantly reduced in rural areas. Oral infection and gingivitis have been successfully treated, topical infections, stomach aches, diarrhea, relief for colds, flu, viral and other infections and so on, are among the areas of benefit for this type of program. A program like this has been developed elsewhere in South America (Professor Francisco José de Abreu Matos, Laboratório de Produtos Naturais, Universidade Federal do Ceara).

9. Target Health Categories

While assessing the list of plants for medicinal and food applications for this Colombia project, we specifically kept in mind three "Target Health Categories" that we believe to be expanding in the U.S. and abroad. We hope to continue to target these health categories as we continue our work throughout the year in developing natural products and industry collaboration with Colombia. These "Target Health Categories" are: Women's Health, Thermogenics/ weightloss/ energy, and Diabetes. Although these were targeted, we have included products in our assessment in several other markets, and these target markets are not meant to exclude our assessment to only these markets.

9.1 Women's health (because of Hormone Replacement Therapy [HRT] scandal)

Natural Products for Women's Health is a stable market that has been steadily expanding, and is now poised ready for a period of exponential expansion due to the current controversy and science news associated with hormone replacement therapy (HRT). Women's health has always been considered a staple of the natural products markets, because women tend to be the primary caregivers of the family, and also are the ones who do the shopping, and end up being primary consumers of natural products and health care. Hormone Replacement Therapy is widespread in the United States, and a recent controversy broke through this trend this past July 2002. A study on the preventative benefits of HRT for post-menopausal women was abruptly halted due to early findings that it was increasing rather than decreasing the risk of heart disease and stroke, and raised the chance of breast cancer (see reference appendix for more details). .2, 3

Beyond the first government study that was abandoned on HRT, more recently a review of 30 years of research on HRT confirmed that it does not decrease the risk of developing heart disease among women. Women are starting to quit their HRT routines in mass, and will be seeking natural alternatives that they believe to be healthy from their diet and supplements. These alternatives should be focused on decreasing risk of female cancers, heart disease, post-menopausal symptoms (hot flashes, etc), and osteoporosis.2, 3

9.2 Thermogenics / Weightloss / Energy

Weight loss is the “Holy Grail” of the Natural Foods and Supplement Industry --- many consumers are still in search of the “one pill”, or one diet, that will make them shed their unwanted pounds while they eat excess calories.

In the United States, currently the hottest ingredients, and most sought after new product development collaborations are those involving thermogenics as Ephedra replacements. Additionally, two of the trends that emerged last year are the high protein-low carbohydrate diets, and the satiety products (designed to create a full feeling over longer periods of time. For the scope of the Colombia project, new fibers may be interesting for the latter trend.

9.3 Thermogenics and Ephedra Alternatives

In 1997 the FDA began the official controversy about Ephedra with the passage of the proposed rule on Ephedra. Currently several states have or are evaluating whether to ban the sale of Ephedra completely due to safety concerns. Today, most companies are looking for Ephedra alternatives or other thermogenics that can be added to formulations to reduce the mg. amount of Ephedra used.

Thermogenesis is simply the production of heat by the body. Thermogenic agents increase the metabolism of the body (and thus heat) to “burn off” excess calories, and aid in weight reduction. The main thermogenic agents today on the supplement market are from the Ephedra alkaloids, the methylxanthines, or combinations involving aspirin and/or polyphenols. An exciting new area of research is the natural thermogenic synergy of caffeine and polyphenols in products such as green tea. It is possible that this synergy will be found to be key mechanisms in other GRAS weightloss ingredients, such as yerba mate and guarana.

9.4 Weight-loss Category Statistics

More than half of adults in the U.S. are overweight (97 million).

51% of women and 59% of men are overweight

One quarter of adults (39 million) are obese! (BMI>30)

25% of women and 20% of men

38% of American households had someone trying to loose weight for appearance

23% of American households had someone trying to loose weight for health reasons

1 in 4 shoppers increased their use of weight control products last year

12% increase in overweight women by 2005 predicted

A jump in those loosing weight for health reasons (+8.5 mil) to 92.7 million predicted

A jump in those loosing weight for appearance and other reasons (+5.8 mil) to 68 million predicted

1 in 4 children currently overweight

$46.5 billion is the current estimated size of the weight-loss market,

supplements are estimated to comprise $3.36 billion of this market

Liquid meal replacements make up slightly more than half of the supplement sales for weight-loss.

In 2000, the supplement pill sales for weight-loss increased 12.4%

3/4 of food shoppers confess their food choices are "at least a little influenced" by their desire to control weight.

The single largest food additive product category: calorie reduction agents (fat reducers and non-nutritive sweeteners) comprise a $1.3 billion market

Women's desire to loose 20 lbs. is at a all-time high

The weight loss, obesity and satiety markets are strong and predicted to be sustainable

The childhood obesity market is predicted for next summer/fall

9.5 Diabetes/Hypoglycemia

9.5.1 Blood Sugar

Normal blood sugar is between about 60 – 120 mg/dL. When blood sugar gets out of balance, it can effect our health and our feelings. When a person's blood sugar has an abnormal tendency towards being high, this is called hyperglycemia, and when it is low it is called hypoglycemia. Alarmingly, 40-45% of adults over 65 years of age have either a condition called Impaired Glucose Tolerance (IGT) or Type II diabetes.

IGT is a major risk factor for developing diabetes. When sugar metabolism is dysfunctional due to either insulin secretion or action, the disease called diabetes develops.

9.5.2 Insulin and Blood Sugar Control

Insulin and glucagon are the main hormones associate with blood sugar control, but there are others that influence it, including cortisol, growth hormone and catecholamines (epinephrine and norepinephrine).

After a meal, the blood sugar naturally rises, and insulin is released (from the pancreas). Insulin is the required agent to help glucose enter cells (where glucose is further metabolized), which then lowers the blood-glucose concentration. If the blood sugar is too low, glucagon is released, and the liver is signaled to release stored glycogen, which is then changed to glucose to raise the blood sugar levels back to normal. Glycogen is also stored in the muscles, and can be released and converted to glucose when needed.

9.5.3 Low Blood Sugar (Hypoglycemia)-

This occurs when blood sugar drops below the normal ranges. Associated with hypoglycemia are feelings of irritability, shakiness, tiredness, sweating, intense cravings, confusion, and headaches. Sometimes blood sugar can fall below 60 mg/dL (the lower “normal range”), yet a person can be seen as healthy (they may be fasting). However, when blood sugar levels fall below 45 mg/dL, this is almost always associated with a more serious condition.

9.5.4 High Blood Sugar (Hyperglycemia)-

If blood sugar levels stay over 180 mg/dL, then it is considered too high. Associated with high blood sugar are feelings of thirst, tiredness, blurry vision, and going to the bathroom often. At very high levels, high blood sugar can also make you feel nausea.

9.5.5 Impaired Glucose Tolerance (IGT)-

IGT is becoming more recognized among the public, as it has been found that 11% of adults over 65 have IGT. The blood sugar levels associated with IGT are about 140 – 199 mg/dL. The blood sugar levels with IGT are high, but not consistently high enough to be considered diabetes.

9.5.6 Diabetes Type I – (Child Onset or Insulin Dependent Diabetes)

Although people can get diabetes at any age, this type is usually diagnosed first in juveniles. Type I diabetes is characterized by the body not being able to make insulin any longer because the immune system has damaged the cells that does this. Therefore, insulin is required in the treatment plan of type I diabetes.

9.5.7 Diabetes Type II- (Adult Onset or Non-Insulin Dependent Diabetes)

Type II diabetes is the most common form of diabetes, and this is increasing rapidly. With this type of diabetes, the body is still able to produce insulin, but not enough. Additionally, the insulin that is produced is not used properly by the fat, muscle or liver cells. Insulin is sometimes used in the treatment of Type II diabetes, along with a plan of healthy lifestyle factors, such as weight management, correct nutrition and exercise.

Appendix A - References:

1. Sloan, A.E. 2001. Weighing in on the weight control market. Issue of Functional Foods & Nutraceuticals. July/August
http://www.newhope.com/ffn/FFN_backs/jul-aug_01/weight.cfm

2. HRT Scandel-
http://womensissues.about.com/library/weekly/aa071102a.htm

3. Most Recent HRT Review-
http://womensissues.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fstory.news.yahoo.com%2Fnews%3Ftmpl%3Dstory%26u%3D%2Fnm%2F20020819%2Fhl_nm%2Fhormone_heart_dc_2

5. Europe's Grim Regulatory Future
http://www.guardian.co.uk/weekend/story/0,3605,790733,00.html

6. Ten Kate, K. and Laird, S. 1999. The Commercial Use of Biodiversity. European Communities: UK

7. Natural Product Market Growth Stats, include. Organics:
http://www.newhope.com/nfm-online/nfm_backs/jun_02/34bills.cfm

8. Organic Federal Statistics
http://www.fas.usda.gov/agx/organics/2001/nov01.htm

Trade Data

It has been very difficult to obtain trade data specific to the herbs/botanicals mentioned in this report. Most of the data available is found in Trade related sites like the US Customs Service, STAT-USA and other related sites. Unfortunately the data is very broad, not at all specific to these plants, and must be collected from many different categories. This information may not be very helpful in assisting the project in developing a picture of the trade potential in these plants.

Links to Information

The links listed below are divided into 2 broad categories, those that deal with trade (especially import) data to the US and Europe, and those looking at trade and other data from Latin sources. The most beneficial reference for finding low or no cost trade data and information on the web is the book: International Business Information On The Web, by Lanza, Sheri and edited by Quint, Barbara, 2001

Below I have listed several web sites that were somewhat helpful in looking at these data questions, and certainly a beginning point for research

Trade Data – US – Customs Information, Trade Data, statistics, policies…

http://www.customs.gov/impoexpo/impoexpo.htm
http://dataweb.usitc.gov/scripts/user_set.asp
http://www.ita.doc.gov/td/industry/otea/usfth/tabcon.html
http://www.fedstats.gov/
http://lanic.utexas.edu/cswht/

List of suggested Harmonized Tariff Schedule (HTS4) codes to assist in locating trade data. This data can be constructed using other code systems like Standard International Trade Classification (SITC) codes and North American Industry Classification System (NAICS) codes:

0713 LEGUMINOUS VEGETABLES, DRIED SHELLED
0801 COCONUTS, BRAZIL NUTS AND CASHEW NUTS, FRESH OR DRIED
0805 CITRUS FRUIT, FRESH OR DRIED
0901 COFFEE, WHETHER OR NOT ROASTED OR DECAFFEINATED; COFFEE HUSKS AND SKINS; COFFEE SUBSTITUTES CONTAINING COFFEE
0902 TEA, WHETHER OR NOT FLAVORED
0903 MATE
0904 PEPPER OF THE GENUS PIPER; FRUITS OF THE GENUS CAPSICUM (PEPPERS) OR OF THE GENUS PIMENTA, DRIED, CRUSHED OR GROUND
0905 VANILLA BEANS
0906 CINNAMON AND CINNAMON-TREE FLOWERS
0907 CLOVES (WHOLE FRUIT, CLOVES AND STEM)
0908 NUTMEG, MACE AND CARDAMONS
0909 SEEDS OF ANISE, BADIAN, FENNEL, CORIANDER, CUMIN OR CARAWAY; JUNIPER BERRIES
0910 GINGER, SAFFRON, TUMERIC (CURCUMA), THYME, BAY LEAVES, CURRY AND OTHER SPICES
1102 CEREAL FLOURS OTHER THAN OF WHEAT OR MESLIN
1106 FLOUR AND MEAL OF DRIED LEGUMINOUS VEGETABLES (HD. 0713), OF SAGO OR ROOTS ETC. (HD. 0714); FLOUR, MEAL AND POWDER OF FRUIT AND NUTS ETC. (CH. 8)
1211 PLANTS AND PARTS OF PLANTS (INCLUDING SEEDS AND FRUITS), USED IN PERFUMERY, PHARMACY, OR FOR INSECTICIDAL OR SIMILAR PURPOSES, FRESH OR DRIED
1301 LAC; NATURAL GUMS, RESINS, GUM-RESINS AND BALSAMS

1302 VEGETABLE SAPS AND EXTRACTS; PECTIC SUBSTANCES, PECTINATES AND PECTATES; AGAR-AGAR AND OTHER MUCILAGES AND THICKENERS, DERIVED FROM VEGETABLE PRODUCTS
1511 PALM OIL AND ITS FRACTIONS, WHETHER OR NOT REFINED, BUT NOT CHEMICALLY MODIFIED
1513 COCONUT (COPRA), PALM KERNEL OR BABASSU OIL AND THEIR FRACTIONS, WHETHER OR NOT REFINED, BUT NOT CHEMICALLY MODIFIED
1515 FIXED VEGETABLE FATS AND OILS (INCLUDING JOJOBA OIL) AND THEIR FRACTIONS, WHETHER OR NOT REFINED, BUT NOT CHEMICALLY MODIFIED
1521 VEGETABLE WAXES (OTHER THAN TRIGLYCERIDES), BEESWAX, OTHER INSECT WAXES AND SPERMACETI, WHETHER OR NOT REFINED OR COLORED
1801 COCOA BEANS, WHOLE OR BROKEN, RAW OR ROASTED
1802 COCOA SHELLS, HUSKS, SKINS AND OTHER COCOA WASTE
1803 COCOA PASTE, WHETHER OR NOT DEFATTED
1804 COCOA BUTTER, FAT AND OIL
1805 COCOA POWDER, NOT CONTAINING ADDED SUGAR OR OTHER SWEETENING MATTER
1806 CHOCOLATE AND OTHER FOOD PREPARATIONS CONTAINING COCOA
2101 EXTRACTS, ESSENCES AND CONCENTRATES OF COFFEE, TEA OR MATE AND PREPARATIONS THEREOF; ROASTED CHICORY ETC. AND ITS EXTRACTS, ESSENCES AND CONCENTRATES
2401 TOBACCO, UNMANUFACTURED (WHETHER OR NOT THRESHED OR SIMILARLY PROCESSED); TOBACCO REFUSE
2403 TOBACCO AND TOBACCO SUBSTITUTE MANUFACTURES, NESOI; HOMOGENIZED OR RECONSTITUTED TOBACCO; TOBACCO EXTRACTS AND ESSENCES
2939 VEGETABLE ALKALOIDS, NATURAL OR SYNTHETIC, AND THEIR SALTS, ETHERS, ESTERS AND OTHER DERIVATIVES
3301 ESSENTIAL OILS, CONCRETES AND ABSOLUTES; RESINOID;EXTRACTED OLEORESINS; CONCEN OF ESSEN OILS AND TERPENIC BY PRODS; AQUEOUS SOLUTNS ETC. OF ESSEN OIL
4001 NATURAL RUBBER, BALATA, GUTTA-PERCHA, GUAYULE, CHICLE AND SIMILAR NATURAL GUMS, IN PRIMARY FORMS OR IN PLATES, SHEETS OR STRIP

Trade Data – Latin America – Links to different organizations, search engines and trade related sites:

http://www.ntu.edu.sg/library/stat/statdata.htm
http://www.libraries.rutgers.edu/rul/rr_gateway/research_guides/busi/intbus.shtml
http://libweb.uncc.edu/ref-bus/vibehome.htm
http://www.sice.oas.org/
http://www.searchenginecolossus.com
http://www.twics.com/~takakuwa/search/search.html
http://www.latinworld.com/sur/index.html
http://www.brint.com/Country.htm#IntAmerica
http://websearch.about.com/msub12-m14.htm?once=true&
http://www.gksoft.com/govt/en/america.html
http://www.braziltradenet.gov.br/defaultIE.asp

Suggestions for Acquiring Further Data

Since acquiring primary trade data relative to these plants is difficult, we propose to develop a more comprehensive study over time. This study would be conducted in 2 parts as described below.

Part 1 – Contact Embassies and Trade Organizations

We propose to contact the Embassies and Trade Organizations for all the Latin American countries of interest. The purpose of this contact would be to attempt to gather trade data these governments and organizations may have, as well as to develop lists of growers, processors, exporters and so on. In addition to some trade data, we would also develop a list of potential alliance partners. This project can be done mostly by email or fax, with an appropriate introductory letter. We should be able to expect a high reply rate since most countries are eager to establish new commercial ties.

Part 2 – Survey to Processors, Traders, Exporters, Importers and Manufacturers

The second part of the study is to prepare a survey to submit to the list of growers, processor, exporters and so on. The intention of the survey again will be twofold. The first intention is to gather data on trade, commerce, potential alliances, technologies, strengths and so on. The second intention is to develop relationships with some of these organizations as potential partners in later phases of the project.

After an initial contact (less formal) with each organization, we would prepare and submit a survey that attempts to gather information on trade data (tonnage and $ values), trade practices, trade barriers, attitudes regarding trade, alliances and our project in particular. We could also begin assessing available technology, research and processing capacities. Reply rates may not be high, but we should be able to extrapolate sufficiently from any data received. We would also follow this up with open-ended interviews and both approaches would build upon this present study, and also allow us to gather market intelligence throughout the entire project period for all targeted and selected plants as well as the incubator plants,, thus sharing opportunities.

Appendix B - Contacts

Over more than 60 companies were called and contacted, and either met and/or spoke with people via email or phone about the project . The following short list includes some of the most responsive so far. This section had required significant personal attention and in general it was our personnal contacts that allowed us to achieve so much in this short project period, and this will continue to be an ongoing thrust of the marketing connection so that it ties together our market driven approach from the outset of the commercialization process.

Specific Contacts:

Aveda Corporation
Minneapolis, MN 55449-7106
Web site: Www.aveda.com
Work: 212-643-2310
Fax: 212-643-2316

CEO: RFI Ingredients

CEO: Exalted Extracts

Buyer: Shaklee Corporation

PSPharma/Shaman Botanicals

CEO: Centroflora Intl.
Av. Juruce, 302 1st floor
Sao Paulo, SP
Brazil 04080-011
Email: intl.cflora@attglobal.net

Related Areas of Interest as they focus in South America:
Rainforest Alliance
Sustainable Botanicals Project
Email: Sarahlaird@aol.com

APPENDIX C - United States Wholesale and Retail Vendors

United States Wholesale and Retail Vendors:

Anamu: *Petiveria alliacea*

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Nature's Sunshine 506 Ivy Lake Road Morrison, TN 37357 www.healthy-sunshine.com businesssop@healthy-sunshine.com 931-728-4965 or 888-523-1727 fax: 503-218-7355	Processed		N/A	W
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Bulk	Raw material	N/A	W
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Bulk Herbs	N/A	W 1 lb/ $25.00
Germa-Drugs.com P.O. Box 160672 Miami, FL 33116-0672 www.germa-drugs.com	Processed	100% and mixed capsules	N/A	W 100caps/ $10.36 (mixed capsules) 100caps/ $11.99 (100% capsules)
Natural Connections 1217 S. Santa Fe Salina, KS 67401 www.nspcentral.com sales@nspcentral.com 800-579-8633 fax: 785-825-2494	Processed	Capsules (100% powder)	N/A	W
Caribe Natural Inc. Miami, FL www.caribenatural.com	Coming Soon	N/A	N/A	N/A

Annatto: *Bixa orellana*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed, Bulk	Whole seed, mixed seasonings, drink mix, soup mix	O	R 1lb.package/ $8.05 (seed whole) 1lb.package/ $16.55 (popcorn seasoning 1lb.package/ $11.35 (soup mix) 1lb.package/ $6.75 (drink mix)
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Bulk	Raw material	N/A	W
Oshun Spirit Arts Ltd. 33511 Best Avenue Mission, BC Canada V2V 5Z3 www.oshun.bc.ca sales@oshun.ca 604-820-1099 fax: 604-820-0280	Bulk	Bulk powder	N/A	W
Woodland Foods Inc. 2011 Swanson Court Gurnee, IL 60031 www.woodlandfoods.com info@WoodlandFoods.com 847-625-8600 fax: 847-625-5050	Bulk	Bulk seed	N/A	W
Herbal Healer Academy 127 McCain Dr. Mt. View, AR 72560 www.herbalhealer.com 970-269-4177 fax: 870-269-5424	Bulk	Raw bulk	N/A	W
Peru Village www.peruvillage.com	Processed	Lotion	N/A	R

Bitter Melon, *Momordica charantia*

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Spring Valley Herbs & Natural Foods 1738 S. Glenstone Springfield, Missouri 65804 www.springvalleyherbs.com 417-882-1033 800-967-3982	Processed	Combination capsules	N/A	R 30capsules/ $10.75
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Bulk	Raw material, extracts	N/A	W
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Whole herb powder	N/A	1 lb/ $20.00

Cat's Claw, *Uncaria tomentosa*

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Natural HealthSource Thenaturalhealthsource.com info@thenaturalhealthsource.com	Processed	100% Capsules	N/A	R 120capsules/ $35.95
Amaranthine Aromatics 4429 Hillcroft Drive Cleveland, OH 44128 www.amaranthine.com amaran@amaranthine.com	Processed	Herbal tincture	N/A	W 1 ounce/ $7.50 1 gallon/ $200

1-800-842-8609				
Enriching Gifts International P.O. Box 26408 Honolulu, HI 96825 www.enrichinggiftsinternational.com info@ronaldkschneider.com 406-232-4414 fax: 406-232-5595	Processed	Multi-nutrient capsule	N/A	R 60capsules/ $79.95 W 60capsules/ $59.95
Nature's Sunshine 506 Ivy Lake Road Morrison, TN 37357 www.healthy-sunshine.com businesssop@healthy-sunshine.com 931-728-4965 or 888-523-1727 fax: 503-218-7355	Processed	Capsules		W 100capsules/ $12.95
Nature's Way 10 Mountain Springs Parkway Springville, Utah 84663 www.naturesway.com 801-489-1500 fax: 801-489-1700	Processed	100% Capsules	N/A	R 60capsules/ $18.49 (standardized) 100capsules/ $9.49
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Bulk	Loose bark, (Cut&Sifted, Powder)	O	1lb./ $24.75 (cut & sifted bark) 1lb./ $27.85 (bark powder)
Solgar Vitamin and Herb Company 500 Willow Tree Road Leonia, NH 07605 USA www.solgar.com 877-SOLGAR-4 800-645-2246	Processed	Tablets (inner bark), and Vegicaps® (powder, extract)	N/A	R Available in bottles of 90
Vitamin Power 4936 Yonge St., Suite #712 Toronto, ON M2N 6S3 Canada www.internationalvitaminpower.com tina@internationalvitaminpower.com 800-686-1986 fax: 866-686-1986	Processed	100% Capsules, tablets	O	R
Viable Herbal Solutions P.O. Box 969 Morrisville, PA 19067 www.viable-herbal.com vhssales@viable-herbal.com 800-505-9475 or 215-337-8182 fax: 800-505-9476 or 215-337-8186	Bulk	Powdered Botanical Extract	N/A	W 1/2lb/ $129.55
Ashaninka Imports P.O. Box 770065 Miami, FL 33177	Processed and Bulk	Extract capsules, liquid	N/A	W

www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224		extract, standardized tea		
NuLifeMeds 13547 Ventura Blvd #383 Sherman Oaks, CA 91423 www.nulifemeds.com nulifemeds@aol.com 800-971-5619	Bulk	Tea, mixed vitamin packets.	N/A	R
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Vine cut and sifted bulk Vine Powder bulk 500 mg caps Liquid Concentrate	N/A	W 1lb/ $17.00 1lb/ $18.00 R $13.00 2 oz./ $15.90

Chanca piedra, *Phyllanthus niruri*

Company Name Address URL Email Phone Number Fax	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Bulk	Raw material	N/A	W
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Whole herb powder Liquid Extract (whole herb)	N/A	W 1lb/ $20.00 R 2 ounce/ $18.90

Chuchuhuaza, *Maytenus laevis*

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Bulk	Raw material	N/A	W
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Bark Powder Liquid Extract of Bark	N/A	W 1lb/ $21.00 R 2 oz./ $18.90

Cinnamon, *Cinnamonum* spp.

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed and Bulk	Essential oil, loose(ground, chips and sticks)	O	R 1/2oz.bottle/ $8.25 1lb.ground/ $10.35 1lb.chips/ $7.25 1lb.sticks/ $20.65 (non organic) 1lb.sticks/ $30.95 (certified organic)
Vitamin Power 4936 Yonge St., Suite #712 Toronto, ON M2N 6S3 Canada www.internationalvitaminpower.com	Processed	Tea, mixed tablets, cough syrup	N/A	R

tina@internationalvitaminpower.com 800-686-1986 fax: 866-686-1986				
Viable Herbal Solutions P.O. Box 969 Morrisville, PA 19067 www.viable-herbal.com vhssales@viable-herbal.com 800-505-9475 or 215-337-8182 fax: 800-505-9476 or 215-337-8186	Bulk	Powdered Herb	N/A	W 1/2lb./ $12.27

Ginger, *Zingiber spp.*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Nature's Way 10 Mountain Springs Parkway Springville, Utah 84663 www.naturesway.com 801-489-1500 fax: 801-489-1700	Processed	100% Capsules	N/A	R 100capsules/ $7.99 180capsules/ $12.49
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed, Bulk	100% capsules, loose(cut&sifted), whole ginger root, extract, tea, seasoning blends (dry & liquid)	O	R 1lb./$20.40 (cut & sifted cert. org.) 1lb.whole root/$6.45 1lb.tea blend/$13.05 100capsules/ $10.79 (certified organic)
Solgar Vitamin and Herb Company 500 Willow Tree Road Leonia, NH 07605 USA www.solgar.com 877-SOLGAR-4 800-645-2246	Processed	Vegicaps® (using ginger extract, raw ginger powder)	N/A	R Available in bottles of 100
Vitamin Power 4936 Yonge St., Suite #712 Toronto, ON M2N 6S3 Canada www.internationalvitaminpower.com	Processed	100% and mixed capsules, body wash, ginger chews, tea, tincture	O	R

tina@internationalvitaminpower.com 800-686-1986 fax: 866-686-1986				
Viable Herbal Solutions P.O. Box 969 Morrisville, PA 19067 www.viable-herbal.com vhssales@viable-herbal.com 800-505-9475 or 215-337-8182 fax: 800-505-9476 or 215-337-8186	Bulk	Powdered Botanical Extract	N/A	W 1/2lb./$30.00
Nature's Sunshine 506 Ivy Lake Road Morrison, TN 37357 www.healthy-sunshine.com businesssop@healthy-sunshine.com 931-728-4965 or 888-523-1727 fax: 503-218-7355	Processed		N/A	W
Amaranthine Aromatics 4429 Hillcroft Drive Cleveland, OH 44128 www.amaranthine.com amaran@amaranthine.com 1-800-842-8609	Processed	Tincture	N/A	W

Guarana, *Paullinia cupana*

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Bulk	Ground seed	O	R 1lb.seed/ $19.25 (ground)
Spring Valley Herbs & Natural Foods 1738 S. Glenstone Springfield, Missouri 65804 www.springvalleyherbs.com 417-882-1033 800-967-3982	Processed	Tea,100% and mixed tablets and capsules	N/A	R
Viable Herbal Solutions P.O. Box 969 Morrisville, PA 19067 www.viable-herbal.com vhssales@viable-herbal.com 800-505-9475 or 215-337-8182 fax: 800-505-9476 or 215-337-8186	Bulk	Powdered Botanical Extracts	N/A	W 1/2lb./ $19.09

Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Processed and Bulk	Powder, Capsules	N/A	W
Amaranthine Aromatics 4429 Hillcroft Drive Cleveland, OH 44128 www.amaranthine.com amaran@amaranthine.com 1-800-842-8609	Processed	Tincture (from seeds, and mixed)	N/A	W 1oz./ $7.50 1gallon/ $200 (mixed tincture)
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Seed Powder	N/A	W 1lb/ $24.00

Jaborandi, *Pilocarpus jaborandi*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Bulk	Raw material	N/A	W

Lemon Grass, *Cymbopogon* sp.

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com	Processed and Bulk	100% and mixed extract,	O	2oz.bottle/ $14.29 (mixed) 1/2oz.bottle/ $5.85

800-669-3275		loose (cut&sifted)		(lemongrass oil) 1lb.package/ $15.25 (cut&sifted cert.org.)
Oshun Spirit Arts Ltd. 33511 Best Avenue Mission, BC Canada V2V 5Z3 www.oshun.bc.ca sales@oshun.ca 604-820-1099 fax: 604-820-0280	Bulk	Essential Oil	N/A	W
Essential Wholesale P.O. Box 33761 Portland, OR 97292 www.essentialwholesale.com 866-252-9639 or 503-252-9639 fax: 503-258-1365	Processed	Essential Oil	N/A	W 1oz./ $3.50 4oz./ $7.25 16oz./ $19.90
Pure Natural Essential Oils www.essential-oil.org	Processed	Essential Oil	N/A	R 4oz/ $36.24
Bassett Aromatherapy P.O. Box 176 Cardiff by the Sea, Ca 92007 www.aromaworld.com 800-738-8678 fax: 760-944-7109	Processed	Essential Oil	N/A	R 1/2 oz/ #4.00
Herbal Healer Academy 127 McCain Dr. Mt. View, AR 72560 www.herbalhealer.com 970-269-4177 fax: 870-269-5424	Bulk and Processed	Tea bags/ Bulk	N/A	R Tea Bags: 1lb/ $16.50

Lemon verbena, *Aloysia triphylla*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed and Bulk	Tea blend, Leaf (cut&sifted),	O	R 1lb.tea blend/$17.75 1lb.tea blend/$33.55 1lb.leaf/ $28.30 (cut & sifted leaf)

Patchouli, *Pogostemon cablin*

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed	Essential Oil	O	R 1/3oz.bottle/ $11.65 (certified organic) 1/2oz.bottle/ $10.95
Nature's Sunshine 506 Ivy Lake Road Morrison, TN 37357 www.healthy-sunshine.com businesssop@healthy-sunshine.com 931-728-4965 or 888-523-1727 fax: 503-218-7355	Processed		N/A	W
Oshun Spirit Arts Ltd. 33511 Best Avenue Mission, BC Canada V2V 5Z3 www.oshun.bc.ca sales@oshun.ca 604-820-1099 fax: 604-820-0280	Bulk	Essential Oil	N/A	W
Essential Wholesale P.O. Box 33761 Portland, OR 97292 www.essentialwholesale.com 866-252-9639 or 503-252-9639 fax: 503-258-1365	Processed	Essential Oil	N/A	W 1oz./ $4.10 4oz./ $11.10 16oz./ $31.00
Natural Connections 1217 S. Santa Fe Salina, KS 67401 www.nspcentral.com sales@nspcentral.com 800-579-8633 fax: 785-825-2494	Processed	Pure Essential Oil,	N/A	W
Herbal Healer Academy 127 McCain Dr. Mt. View, AR 72560 www.herbalhealer.com 970-269-4177 fax: 870-269-5424	Bulk	Raw bulk herbs	N/A	W 1lb./ $20.55 (cut & sifted)
Bassett Aromatherapy P.O. Box 176 Cardiff by the Sea, Ca 92007 www.aromaworld.com 800-738-8678 fax: 760-944-7109	Processed	Essential Oil	N/A	W 1/2oz bottle/ $6.00
Pure Natural Essential Oils	Processed	Essential	N/A	W

www.essential-oil.org		Oil Dark/ Light		4oz/ $51.60 4oz/ $68.40

Pau d'Arco, *Tabebuia avellanedae*

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Nature's Way 10 Mountain Springs Parkway Springville, Utah 84663 www.naturesway.com 801-489-1500 fax: 801-489-1700	Processed	Liquid, Capsules	N/A	R 2oz./ $12.95 (liquid) 100capsules/ $7.99 180capsules/ $12.49
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed Bulk	100% and mixed:Liquid, Capsules, Loose (Cut and Sifted, Powder)	O	R 1oz.bottle/ $8.15 (mixed formula) W 1lb./$10.65 (cut and sifted) 1lb./ $12.00 (powder) 100capsules/ $8.19
Vitamin Power 4936 Yonge St., Suite #712 Toronto, ON M2N 6S3 Canada www.internationalvitaminpower.com tina@internationalvitaminpower.com 800-686-1986 fax: 866-686-1986	Processed	100% capsules	O	R
Spring Valley Herbs & Natural Foods 1738 S. Glenstone Springfield, Missouri 65804 www.springvalleyherbs.com 417-882-1033 800-967-3982	Processed	100% capsules (inner bark), tea	N/A	R
Viable Herbal Solutions P.O. Box 969 Morrisville, PA 19067 www.viable-herbal.com vhssales@viable-herbal.com 800-505-9475 or 215-337-8182 fax: 800-505-9476 or 215-337-8186	Bulk	Powdered botanical extract	N/A	W 1/2lb./ $95.45
Ashaninka Imports	Bulk	Raw material	N/A	W

P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224				
Nature's Sunshine 506 Ivy Lake Road Morrison, TN 37357 www.healthy-sunshine.com businesssop@healthy-sunshine.com 931-728-4965 or 888-523-1727 fax: 503-218-7355	Processed	Extract, Lotion, "Power Pack", Tea	N/A	W
Amaranthine Aromatics 4429 Hillcroft Drive Cleveland, OH 44128 www.amaranthine.com amaran@amaranthine.com 1-800-842-8609	Processed	Tincture	N/A	W 1oz./ $7.50 1gallon/ $200
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Bark Powder Liquid Extract	N/A	W 1lb/ $15.00 R 2 oz/ $18.90

Sangre de Drago, *Croton lechleri*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com 305-971-3008 fax: 305-971-3224	Bulk	Raw material	N/A	W
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Processed	Liquid Resin from SdG Tree	N/A	R 2oz/ $18.90

Stevia, *Stevia rebaudiana*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Nature's Way 10 Mountain Springs Parkway Springville, Utah 84663 www.naturesway.com 801-489-1500 fax: 801-489-1700	Processed	Liquid	N/A	R 2oz./ $15.49
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed and Bulk	Loose (Cut&Sifted, Powder), extract (powder), tea blend	O	R 1lb.cut&sifted/$ 19.15 1lb.powder/ $21.95 1lb.powder/ $31.75 (certified organic) 1/4lb.extract/ $40.95 1lb.tea blend/$25.60
Vitamin Power 4936 Yonge St., Suite #712 Toronto, ON M2N 6S3 Canada www.internationalvitaminpower.com tina@internationalvitaminpower.com 800-686-1986 fax: 866-686-1986	Processed	Extract (100% and mixed), tea, multi-vitamins	N/A	R
Nature's Sunshine 506 Ivy Lake Road Morrison, TN 37357 www.healthy-sunshine.com businesssop@healthy-sunshine.com 931-728-4965 or 888-523-1727 fax: 503-218-7355	Processed	Mixed supplement, packets	N/A	W
Amaranthine Aromatics 4429 Hillcroft Drive Cleveland, OH 44128 www.amaranthine.com amaran@amaranthine.com 1-800-842-8609	Processed	Tincture	N/A	W 1oz./ $7.50 1gallon/ $200
Ashaninka Imports P.O. Box 770065 Miami, FL 33177 www.ashaninka.com info@ashaninka.com	Bulk	Raw material, extracts	N/A	W

305-971-3008 fax: 305-971-3224				
Raintree Nutrition, Inc. 10609 Metric Blvd, Suite 101 Austin, Texas 78758 www.rain-tree.com info@rain-tree.com 512-833-5006 fax: 512-833-5214	Bulk	Leaf Powder	N/A	W $16.00

Tonka Bean, *Dipteryx odorata*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Bulk	Whole beans	O	R 1lb.package/ $31.95 (whole beans)

Turmeric, *Cucurma longa*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Nature's Way 10 Mountain Springs Parkway Springville, Utah 84663 www.naturesway.com 801-489-1500 fax: 801-489-1700	Processed	Standardized herbal extract 100% Capsules	N/A	R 60capsules/ $15.49
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed, Bulk	Ground root, whole root, Cooking seasoning blends (liquid and powders)	O	R 1lb./ $7.05 (ground root) 1lb./ $16.45 (ground root, cert. organic) 1.76oz bottle/ $4.19 (root ground cert. org) 1lb.package/ $5.65 (root whole)

Solgar Vitamin and Herb Company 500 Willow Tree Road Leonia, NH 07605 USA www.solgar.com 877-SOLGAR-4 800-645-2246	Processed	Vegicaps® (extract, raw powder)	N/A	R Available in bottles of 60
Spring Valley Herbs & Natural Foods 1738 S. Glenstone Springfield, Missouri 65804 www.springvalleyherbs.com 417-882-1033 800-967-3982	Processed	100% and mixed capsules (extract, powder).	N/A	R

Vetiver, *Vetiveria zizanioides*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Frontier Natural Brands www.frontiercoop.com customercare@frontiercoop.com 800-669-3275	Processed	100% and mixed extract	O	R 1/2oz.bottle/ $13.09 (mixed oil) 1/2oz.bottle/ $10.99 (100% vetiver oil)
Oshun Spirit Arts Ltd. 33511 Best Avenue Mission, BC Canada V2V 5Z3 www.oshun.bc.ca sales@oshun.ca 604-820-1099 fax: 604-820-0280	Bulk	Essential Oil	N/A	W
Essential Wholesale P.O. Box 33761 Portland, OR 97292 www.essentialwholesale.com 866-252-9639 or 503-252-9639 fax: 503-258-1365	P	Essential Oil	N/A	W 1oz./ $4.20 4oz./ $12.10 16oz./ $36.90
Herbal Healer Academy 127 McCain Dr. Mt. View, AR 72560 www.herbalhealer.com 970-269-4177 fax: 870-269-5424	Bulk	Cut/ Sifted Ground	N/A	W 1lb./ $13.75
Bassett Aromatherapy P.O. Box 176 Cardiff by the Sea, Ca 92007	Processed	Essential Oil	N/A	W ½ oz. bottle/ $10.00

www.aromaworld.com 800-738-8678 fax: 760-944-7109				
Pure Natural Essential Oils www.essential-oil.org	Processed	Essential Oil from roots	N/A	W 4oz/ $38.40 (Haiti) 4oz/ $115.20 (India) 4oz/ $59.20(France)

Lippia alba:

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Agromercantil Gofer, S.A. www.geocities.com/saragundi/ intgofer@sol.racsa.co.cr	P	Liquid Spray Blend	N/A	R

Lippia dulcis:

Company Name Address URL Email Phone Number Fax	Bulk or Processed	Form	Organics	Prices (W)holesale/(R)etail
Teas, Herbs, and Orchids 32920 Decker Prarie Rd. Magnolia, TX 77355 www.teasherbsandorchids.com sales@teasherbsandorchids.com	B	Bulk Herbs	N/A	W
Glass House Works Church St. PO Box 97 Stewart, OH 45778 www.glasshouseworks.com plants@glasshouseworks.com	B	Plants/Seeds	N/A	R

PassionFlower, *Passiflora incarnata* and *P. edulis*

Company Name **Address** **URL** **Email** **Phone Number** **Fax**	**Bulk or Processed**	**Form**	**Organics**	**Prices (W)holesale/(R)etail**
Essential Wholesale P.O. Box 33761 Portland, OR 97292 www.essentialwholesale.com 866-252-9639 or 503-252-9639 fax: 503-258-1365	Processed	Herbal extracts and infusions	N/A	W
Herbal Healer Academy 127 McCain Dr. Mt. View, AR 72560 www.herbalhealer.com 970-269-4177 fax: 870-269-5424	Bulk	Cut/ Sifted	N/A	W 1lb./ $12.00
Cedar Vale Natural Health www.cedarvale.net 800-758-1012 fax: 620-758-2576	Bulk	Bulk Flower and Powder	N/A	W Flower: 1lb/ $7.75 Powder: 1lb/ $8.14
Life Source 8733 Fawn Drive Dallas, TX 75238 www.yourlifesource.com Loren@yourlifesource.com 877-753-2121 fax: 716-492-2287	Processed	Mixed capsules	N/A	R
Saw Palmetto Harvesting Co. 4000 Hwy 27 Frostproof, FL 33843 www.passionflower.org sales@passionflower.org 800-986-6006 fax: 863-635-5591	Bulk and Processed	Capsules Chipped Ground Tea Grade Capsule grade ground	N/A	R Caps: 100/ $4.99 Chipped: 1lb/ $1.15 Tea grade: 1lb/ $1.25 Capsule grade: 1lb/ $1.75
Erevna 26 The Hill Church Hill Caterham Surrey CR3 6SD UK www.erevna.co.uk 0800-074-9645 fax: +44 (0) 870-161-9389	Processed	Tincture	N/A	R 500ml/ $19.93